

# Railway Age

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## Airplane Freight Cost

SOME of those who undertake to inform the public about railroad freight rates through their newspapers or through speeches in Congress apparently do not know whether the rates they quote are for one hundred pounds, one pound or one ton, while others complain about rates without knowing that they are quoted in cents instead of dollars. The Hearst papers, whose editor recently has been warning railroad stockholders that their holdings are liable to be depreciated by the competition of the airplane as a carrier of freight, the other day carried a Universal Service story to the effect that Henry Ford had calculated the cost of sending freight by airplane from Detroit to Chicago at 8½ cents a pound and that "these figures show that air freight is one-third or one-quarter cheaper than rail or truck competition and many times cheaper than express." One of the papers placed it under a headline extending halfway across the front page: "Ford's Air Line Shatters Freight Rates." Eight and one half cents a pound would be \$8.50 per hundred pounds, which would carry first-class freight across the continent and most of the way back.

## "Passenger Train—Handle with Care"

SOME sort of placard with the above inscription might well be placed where the engineman can see it on every passenger train. Rough handling of trains—often the finest limiteds with every convenience for travel comfort—is a constant source of irritation to passengers and of complaints to the traffic departments. To eliminate this nuisance, the common practice has been to blame the engineman and let it go at that. But this is not strictly fair, as the management of the Richmond, Fredericksburg & Potomac has recognized. This railway has believed that in many instances enginemen have thought they were starting and stopping their trains smoothly when the passengers in the rear cars knew too well that they were not. The policy was adopted of detailing these enginemen from time to time, at convenient periods and at regular dead-head rates of pay, to ride over the road in cars near the rear of the train so that they might actually experience the results of rough handling. In this way the enginemen were impressed by the fact that the handling of the throttle and air, which they ordinarily thought from their position in the engine cab was performed with due caution, as a matter of fact, when affected by long trains with the consequent slack between the cars was attended with serious discomforts to those far back in their trains. Having this fact so impressed upon them they have redoubled their efforts on subsequent runs to perfect the handling of their trains. The plan has worked out satisfactorily, not only from the standpoint of the actual physical experience of the enginemen from their observation runs but from the factor of psychology which entered into it. This plan needs no comment. Its value and subsequent success are obvious.

## Good News from the Northwest

EVIDENCE that the railways and the farmers in the northwest have confidence in its agricultural future is contained in the announcement that the Great Northern will construct an extension 50 miles long in northeastern Montana to open up a highly productive agricultural region. It is enabled to finance the construction by reason of the fact that the farmers in the territory to be served are subscribing heavily for Great Northern stock at par to help defray the cost of the construction. This is a striking example of confidence on the part of both the railway and its patrons in the future of the northwest. It is highly significant, also, that the farmer patrons are willing to back up their pleas for railway service with their financial support. For a number of years instances of this sort have been exceedingly rare. Due to this fact, new railway construction has been at a standstill. Ordinarily, only a portion of the cost of new railway construction can be met by the sale of mortgage bonds and the balance must be furnished by stockholders. The low earnings of the railways, particularly in the northwest, in recent years, have depressed the prices of their stocks so that few roads in this area are able to market new stock at par to finance construction. It is very gratifying that farmers are once more willing to assume such a responsibility in order to provide adequate transportation. Such co-operation built up the west, to the mutual benefit of farmer and railway. A revival of such united effort to the common benefit will go far toward bringing back the prosperity of early days in the northwest.

## Changing Engine Crews Without Changing Engines

LUDDENDENFOOT, England, on the London, Midland & Scottish Railway was the scene, on March 26, of a derailment, described by the Ministry of Transport in a report dated April 15, in which an engineman of a heavy freight train was killed (with his fireman) about 3:45 a. m., by overrunning a signal within the first mile of his run. He was moving at moderate speed, on a long siding or loop line, and neglected to stop at the stop signal which forbade him to enter upon the main line. His engine was wrecked against a bumping post. The accident is of interest at this distance mainly because of the circumstance that this engineman (and fireman) had just taken the train from another crew, at Mytholmroyd. They had had no occasion to make any examination of the engine, train, switches, or signals, prior to starting, except to listen to the statements of the men who were being relieved, as to the condition of the engine, the length of the train, etc. The engineman going off duty did, indeed, say "you are on the loop," and he testified at the inquiry that it was the regular practice to warn the oncoming driver in respect of the line on which the train was standing. This statement, however, was not made

to engineman and fireman together: the fireman had entered the cab, while the engineman received the information at a point some distance away. The case illustrates—what, indeed, no engineman of experience needs to be told—that in relieving another crew while an engine is motionless and attached to a train, there is need of more particular care than under circumstances where there is more “action.” In other words, the changing of crews within the period of a five-minute stop, a practice now so common on many roads in this country, on heavy passenger runs, is a proceeding that calls for very systematic care. It seems likely that if in this case the essential information for the engineman and fireman had been imparted to them *together*, the fact that the train was on a given track would have been impressed on their minds with the necessary definiteness, and their error prevented. The rule that in all vital matters in train operation, the engineman and the fireman shall communicate with each other, is a valuable one. If both of these two men had been told at the same time, that fact would have tended to induce observance of this rule. Every engineman will do well to remember also that “swapping horses in the middle of the stream” always has been classed as a thing requiring very special care.

### *Automobile Accidents at Crossings and at Other Places*

**STATISTICS** are dull, and often tiresome; and statistics of grade crossing accidents are in danger of becoming more tiresome than all the rest, because of their sameness and the dimness of the hope for improvement. But the papers of last Monday morning contained a contrast that is so simple and striking that the reader will be willing to suppress his aversion to statistical information. The deaths at crossings in the whole country last year totaled 119 less than in 1923; and the total for the first two months of this year was 79 less than in the same period of 1924; so much for railroad records. Total persons killed in all automobile accidents reported from eleven cities, in one newspaper (on Monday, June 1, for less than two days) *thirty-eight*. In only five of the 38 fatalities is a railroad train mentioned in the statement of cause.

### *Signals as Fuel Savers*

**SIGNALS** as a means of conserving fuel were brought to the attention of the members of the International Railway Fuel Association at their convention in Chicago recently in a paper presented by B. J. Schwendt, in which it was stated that tests have shown that 280 lb. of coal were consumed in starting a five-car passenger train of 300 tons and 480 lb. of coal in starting a freight train of 1,610 tons gross weight. If only one train stop were eliminated per run over a division this would save an average of  $2\frac{1}{2}$  lb. of coal per 1,000 gross ton-miles for the year 1924. On the average railroad the use of signaling can eliminate not only one train stop but many train stops in each run. Different roads have various conditions to meet. In some cases automatic block signals assist in getting trains over the road with fewer stops and on certain divisions have reduced the time between terminals from one to two hours. Interlocking plants at junctions and crossings where traffic is heavy will eliminate enough train stops in a few years to pay for the plant. Remote control switch machines for operating passing track switches eliminate two train stops

for every train movement through a passing track. Perhaps the greatest possibility to reduce the number of train stops lies in the field of directing train movements by signals instead of written train orders which is being accomplished not only on single and double track lines, but on multiple tracks for movements against the normal direction of traffic. The possibilities of preventing train stops and thus saving fuel by the use of signaling are as yet comparatively untouched. Railroad officers should insist that such possibilities be investigated on their lines.

### *When Locomotives Have Asthma*

**THE** disconcerting effects of asthma on the human system, particularly in serious cases, are well known. Locomotives also are subject to a malady which may well be likened to asthma. With locomotives, the symptoms are lack of power, sluggish action, and unusual consumption of fuel and water. The underlying causes are insufficient full throttle opening, superheater units choked with lime or scale, and steam passages in the cylinders restricted by carbon deposits. In one case the mechanical engineer of a western railroad found a drop from 200 lb. boiler pressure to 140 lb. pressure in the steam chest when the locomotive was operated at full throttle opening. He remarked that the locomotive had asthma. The engineman and fuel supervisor witnessed the effects of the malady but could not diagnose the case. The only remedy lay in an *internal operation* in the back shop or enginehouse. When motive power performance is falling short of the desired standards, it may be well to have the locomotives examined to see if their trouble is not asthma.

### *A Problem That Must Be Met*

**THE** motor truck and the motor bus have come to stay. They have demonstrated that they have a place in our transportation system. The facts presented at the conference at Chicago last week, supplementing information brought out at a similar meeting at Boston last fall, demonstrated this. The time has come when the railways must recognize motor transportation and decide whether it shall develop as an aid or as a competitor. A few roads have given this problem serious consideration and have undertaken some experiments to ascertain the extent to which motor transportation lends itself to their operations. This action should become universal in order that the possibilities as well as the limitations of motor transportation may be established quickly and with the minimum duplication of service.

As far as freight transportation is concerned it is rapidly becoming evident to motor truck operators and the railways alike that the motor truck is not a serious competitor of the railways for its operations are confined to a relatively limited radius and to certain kinds of traffic. The belief prevails among some railway men that the railways will be better off without this traffic although it may be questioned whether the roads should relinquish this short haul business without first demonstrating to their satisfaction their inability to handle it with profit by coordinating motor transportation with their existing rail service.

A different and more serious situation confronts the roads with reference to passenger traffic. Practically all of the railways are showing serious losses in passenger revenues, not alone because of the competition of motor busses but also as a result of the increasing use of



privately owned automobiles. It is probably impossible to compete with the individual automobile but the same condition does not prevail with respect to the motor bus. However, the attitude of the roads differs with reference to bus competition. Some, in fact most of the roads, are meeting this situation by curtailing passenger service to keep pace with the decrease in business. A few roads are endeavoring to meet it, however, by more frequent motor coach service on their own rails and one or two have gone so far as to install motor coaches on high-ways, supplementing their rail service and thus meeting and in some instances eliminating competition.

The whole subject of motor transportation is new. It is, however, developing with startling rapidity. The railways owe it to themselves to study this development closely to ascertain whether it does not offer them an opportunity to supplement their rail service and thus to retain and add to the traffic which they are now handling rather than relinquishing it.

## Another Practical Application of Scientific Studies

WHILE the introduction of the new 2-8-4 type locomotive built by the Lima Locomotive Works for the Boston & Albany is naturally a source of general interest among railway officers, it arouses the particular interest of the engineer responsible for the design and maintenance of railway tracks because this type embodies an improvement in the wheel arrangement which offers the promise of lower stresses in track than those produced by other locomotives of equal weight. It represents the definite application of the findings of the Joint Committee on Stresses in Track.

Among other results obtained by this committee in the course of its work was the disclosure of the fact that the stresses produced in rails under the trailing wheels of locomotives are generally higher in proportion to the load imposed by the wheel than those under the driving wheels. The explanation offered by the committee for the phenomena is simple. Stresses in rail, as in all structural members acting as beams, are a function of the load and the span length and as the span in the case of rails is the distance between wheel centers, stresses are higher under trailing wheels because of the relatively great distance of these wheels from the rear driver and the front wheel of the forward tender truck. In the third progress report of this committee, published in 1923, data are given on a test made with a heavy Santa Fe type locomotive equipped with an experimental two-axle trailing truck which showed that the stresses in track produced by this locomotive were definitely lower than those produced by a locomotive of the same type equipped with a single trailing axle.

This suggestion has been carried out in the new Lima locomotive in which a load of 101,300 lb. is divided between two trailing axles spaced 102 in. center to center and with the front trailer axle 84 in. from the rear driving axle, whereas, in the New York Central Class 8000, after which the new locomotive has been patterned, the single trailing axle carries a load of 58,000 lb. and is separated from the rear driving axle by a distance of 130 in. In other words, the later locomotive has been designed with a reduction of 12 per cent in the load per trailer axle and a reduction of 21 per cent in the maximum wheel spacing.

While the action of track under load is so involved that it is impossible to ascertain the actual improvement in

track stress conditions as a consequence of the changes embodied in the design of this locomotive, there is every reason to believe that an actual test would demonstrate marked improvements. Thus there is afforded another demonstration of the value of scientific investigation.

## Recognition for Stores Officers

THE appearance of H. C. Pearce, chief purchasing officer of the Chesapeake & Ohio, before the convention of the International Railway Fuel Association last week in Chicago is another evidence of the increasing participation by purchasing and stores officers in the activities of other branches of transportation work. An earlier instance of an occasion similar to this was the appearance of C. D. Young, stores manager of the Pennsylvania and chairman-elect of Section VI, A. R. A., before the New England Railway Club, of which W. F. Munster, the retiring chairman of Section VI, was president. It might also be noted in this connection that two other railway clubs, the New York Railway Club and the Pacific Railway Club, have stores officers for their presidents at the present time. This should prove a source of gratification to purchasing and stores officers because for many years this group has felt that they have neither enjoyed that degree of recognition to which they were entitled nor that attitude from managements and department officers essential to efficient functioning.

The appearance of Mr. Pearce before the Fuel Association and the prominence of the other stores officers mentioned, however, is tangible evidence that this situation is improving. It is impossible accurately to evaluate the contribution which each of the officers cited has made to the establishment of a better opinion of purchasing and stores work by their participation in other organizations. But there can be no disagreement over the fact that the effect of their joint action has been large. It is thus highly desirable that more attention should be given to the establishment of contacts of this sort through the medium of addresses to employees in other departments and the general and widespread participation in railway association activities.

But there is one point that must not be overlooked. Thus far, stores officers have not appeared as ready to hear representatives of other groups as other groups have been to hear representatives of the purchasing and stores group. It cannot be interpreted as a criticism to venture the assertion that this group can learn much from spokesmen of other groups even as other groups can undoubtedly learn much from spokesmen of the purchasing and stores group. But aside from the question of the information acquired in discussions of this sort, it is fundamentally important to the establishment of the purchasing and stores officer's position that these officers should overlook no opportunity to exhibit the same mental disposition toward the work and position of other groups as they desire to have the other groups exhibit toward theirs. To emphasize this is merely to re-emphasize the truism that respect on the one side begets respect on the other. If the knowledge of Mr. Pearce's appearance before the Fuel Association and of the participation of other purchasing and stores officers in similar activities impresses the group with its opportunity in this direction and results in the establishment of more extended and regular contacts with the representatives of other departments of railway work, it will have inspired a movement, the results of which will be far-reaching and salutary.

## Important Cases

### Before the I. C. C.

**R**AILROADS, dependent upon the rates which the government allows them to charge for their service, and shippers whose business is sufficiently large to make their freight bills a matter of importance, will have a large share of their attention focussed on Washington during the next few months, in spite of President Coolidge's recent suggestion that he would like to see the American people try to forget the federal government for a time. The President apparently meant that until Congress meets in December an opportunity would be afforded the people to attend to their own business with less reference to the possibility of legislative interference. It is almost unanimously conceded that the railroads for some time have been handling their jobs better than ever before but that is not enough to keep a considerable number of their officers free of the necessity for keeping a close eye on or making frequent trips to the offices of the Interstate Commerce Commission. Of course it is not a new thing for railroad men to have to keep in close touch with Washington but an unusually large number of important cases are now pending before the commission which are of such a vital nature as to create some difficulty in the arrangement of vacation plans this summer.

For one thing the commission has inaugurated a nation-wide investigation of the rate structure, under the Hoch-Smith resolution, the main purpose of which seems to be to try to find whether some rates are so high that they ought to be reduced and offsetting advances made in other rates, but which contains language so involved as to offer an excuse for almost any kind of an argument any one cares to make as to its intent. So far the commission has received scores of suggestions as to the rates which ought to be reduced but none as to the specific rates which ought to be advanced. As this investigation has been superimposed upon all the commission's other duties, without any additional appropriation having been made for it, it will be with us long after this summer, but the commission is expected soon to announce a program of hearings in connection with it which will keep the subject of rate adjustment prominent for some time to come.

The commission also has pending before it the petition of the western railroads for an advance or advances in rates which will increase their revenues to the fair return basis contemplated by the transportation act of 1920 but which has not been attained in the five years since the act was passed. In 1924 these roads earned only 3.87 per cent on their property investment and to increase this to 5¼ per cent would require approximately \$182,000,000 a year, equivalent to an 11 per cent advance in their freight rates. Thus far this petition does not seem to have attracted much public attention, although the fact that the shippers have by no means lost their interest in rate relationships is attested by the large number of routine formal complaints being filed with the commission daily.

The railroads as a whole also have a petition pending before the commission for a re-examination of the scale of rates for the transportation of the United States mails, which have so increased in volume that the postal revenues have increased from \$329,726,116 in 1917 to \$572,948,778 in 1924, while the railway mail pay has increased only from \$74,165,246 in 1917 to \$97,298,011 in 1924. The Postmaster General has replied to this petition by saying that the rates, instead of being increased to cover this increased weight of mails carried, ought to be lowered, and all in all a long, drawn out proceeding is in prospect.

The commission has also had before it for some time general investigations of the Southeastern and Eastern class rates as well as several other rate cases of far reaching scope and many important cases on its finance dockets. These include the Nickel Plate unification application, which is still in the process of hearing, and the investigation of the Chicago, Milwaukee & St. Paul receivership, which, according to reports, may include passing on an entire reorganization plan for taking the road out of receivership before the investigation is well under way. Several other important applications which are of great interest as affecting the entire consolidation question are also on the way.

## Books and Articles of Special Interest to Railroaders

(Compiled by Elizabeth Cullen, Reference Librarian, Bureau of Railway Economics, Washington, D. C.)

### Books and Pamphlets

*The Ports of Port Arthur, Sabine, Beaumont and Orange, Texas.* Port Series No. 14 prepared by Board of Engineers, Rivers and Harbors, War Dept., in co-operation with U. S. Shipping Board. Especially sections on "Communications" p. 41-151, and "The Freight Rate situation at Sabine ports," p. 58-76. 148 p. Pub. by Govt. Print. Off., Washington, D. C. 75 cents.

*Proceedings of the Institution of Railway Signal Engineers, 1924-1925.* Part II, Aug., 1924-Feb., 1925. Principal reports on economics of signalling and 3-position signalling. 276 p. Pub. for Institution by Jos. Hawkes, Reading, England. 7s. 6d.

*Report of the National Conference on Utilization of Forest Products.* Includes "Railways and wood preservation," by R. H. Aishton, p. 62-67. U. S. Dept. of Agriculture. Misc. Circular No. 39. 100 p. Pub. by Govt. Print. Off., Washington, D. C. 20 cents.

*Requirements for Passenger Lines and Recommendations for Goods Lines of the Minister of Transport in regard to Railway Construction and Operation.* Various regulations for British railroads. 22 p. Pub. by H. M. Stationery Office, London, Eng. 3s.

*Stability of Investment.* Testimony of Charles Hansel on depreciation before Interstate Commerce Commission. 8 p. Pub. by Engineer, Eastern Group, Presidents' Conf. Comm. on Valuation of Railroads, New York City. Apply.

*The Wire System of a Great Railroad.* Illustrated description of the extent and operation of Pennsylvania Railroad's telegraph and telephone system, P. R. R. Information for Public and Employees, May 25, 1925. 24 p. Pub. by Pennsylvania Railroad, Philadelphia.

### Periodical Articles

*Berlin-to-Bagdad Dream—To-day's Reality,* by George A. Schreiner. Present situation of Berlin-Bagdad project. Current History, June, 1925, p. 416-425.

*Limiting Speed,* by Charles Adler, Jr. Proposes automatic control of motor vehicles at grade crossings. Insurance, May 15-22, 1925, p. 168.

*Recent Strides in Federal Authority,* by William Cabell Bruce. Federal extension of regulation into railroads and many other activities. Scribner's, June, 1925, page 639-644.

*Soft Coal Faces Federal Rule under the Oddie Bill,* provisions proposed in this bill. Annalist, June 1, 1925, by Paul Wooton. Coal car control to enforce certain page 743.



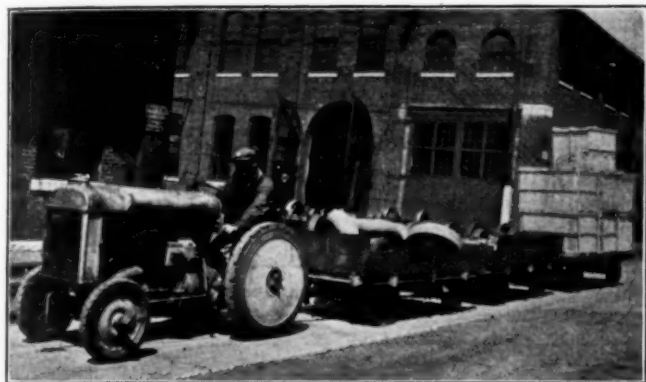
# Stores Delivery on the Burlington\*

*Long experience with this practice of handling material  
affords evidence of profit*

By H. R. Duncan

Inspector of Stores, Chicago, Burlington & Quincy

THE delivery of material to users in the shops has been in effect on the Burlington to some extent for more than 20 years. The first general repair shop in which store delivery was established was at Havelock, Neb., where this practice was started at the time the shop was constructed in 1911. At this time, rigid instructions were issued that no mechanical department employee would be permitted to go to the store to secure material. It was the intention that the store department



Making a Delivery with One of the Several Varieties of Trailers

forces would deliver all material to the shops and return to store stock all shop-manufactured material.

Requisitions for material show where the material is to be delivered. Material that can be applied without being machined, as grates, arch brick, air reservoirs, cylinder head cases, etc., are usually delivered direct to the locomotive. Other items, such as pistons, frames and material of this nature that require machining are delivered to the machine where the work is to be performed. This plan has worked out very satisfactorily for both the mechanical and store departments and has been extended to our other general shops.

About two years ago a comparison was made of the cost of delivering material at Havelock with the cost of handling material to a shop of similar capacity on another railroad. On this railroad it was the plan for the store department to deliver a few items, but for the mechanical department employees to go to the store for the bulk of the material where they were served by counter men or store room attendants. The investigation developed the cost of handling material in the Burlington shops was about \$25,000 per year less than on the other road.

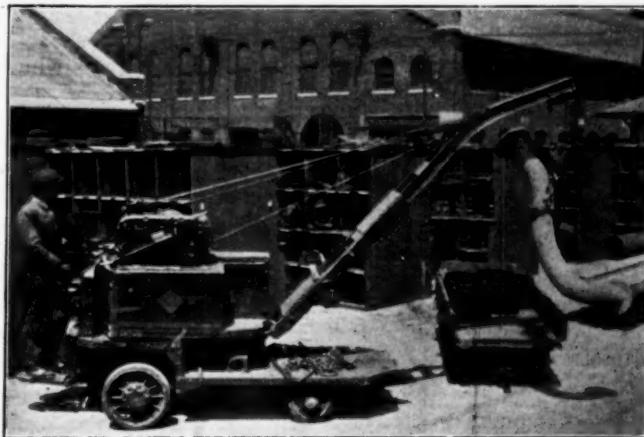
## Delivery to Roundhouses

During the last four years a number of studies have been made of the cost of mechanics, helpers and other roundhouse employees securing their material. Previous to that time the plan in all roundhouses was for the men

using the material to go to the roundhouse office or to the roundhouse foreman, secure a formally approved requisition for the material needed and then go to the storehouse after it. At the storehouse they were served by a counter man or store room attendant.

It was concluded from the studies that it would be possible to improve this method of securing material and the Burlington has since gradually worked out a store delivery system for the roundhouses. A "red cap" or delivery man is employed at a rate of pay equal to a mechanic helper's rate in the same shop. At first the roundhouse orders were formally approved orders made the same as in the general shops and placed at various locations in the shop where they were picked up by the "red cap" and the material furnished. But investigation developed that almost double the saving was possible by eliminating the need of any mechanic's hunting up the foreman or going to the office to secure the requisition.

The memoranda, which are made out by the delivery men, are numbered consecutively and at the end of each



One of the 28 Power Devices Used in Stores Delivery Work

day are turned over to the mechanical department to be covered by formally approved requisitions. These requisitions are returned to the store early the following morning. Such items as tools, tinware, etc., are not furnished on these memoranda. It is the practice, with respect to items such as injectors, lubricators, boiler checks and tools, to have the delivery man pick up the old material when new material is furnished. If there is any question whether or not new material of this nature should be drawn from stock, it is taken up with mechanical officers for correction. Frequently joint inspection of this material is made to see that new material is not being drawn when old material should be used.

The practice of the delivery men going into the store and securing their own material has made it possible at many places to discontinue a number of store room attendants or counter men.

Occasionally mechanics working on a locomotive in a

\* Presented before the annual meeting of Division 6, Purchases and Stores, American Railway Association, at St. Louis, Mo., May 20, 1925.

roundhouse may be in the fire box or in the cab or in the pit underneath the locomotive and the delivery man may not see the mechanic or the mechanic may not see the delivery man. In order to overcome this difficulty, the usual plan is to put a flag up at the end of each roundhouse pit whenever any material is desired.

At present this delivery service is in use in every roundhouse that handles enough locomotives to warrant the service. At the small enginehouses where only five or six men are employed on any one shift, it has not been felt that any economy could be effected.

#### Delivery to Car Repair Tracks

It is the general plan on the Burlington to place material on repair tracks as near where it is to be used as possible. Formerly the mechanics and helpers engaged in repairing cars were permitted to secure anything they wanted and the material was accounted for as "working stock." The result of checks at various repair tracks on the cost of mechanical employees securing their material and taking it to the car, has been the installation of store delivery at nearly all repair tracks.

The plan generally in effect is that cars set on repair tracks to be repaired are inspected and a duplicate of the inspection report is made out and turned over to the store. This indicates the material to be used in repairing the car. As a general rule, all of the material necessary to make repairs to cars is not shown on the original form as it is difficult for an inspector to determine everything that is needed and the car men are constantly in need of other items. The car men are therefore furnished with flags and whenever additional material is needed the car man places a flag on the side of the car and this indicates to the delivery force that additional material is needed. The delivery man goes there, sees the car man, determines what is needed and gets it to him as soon as possible. When material is wanted, the flag is placed at a 90 deg. angle on the car. When the delivery man takes the order for the material from the car man, he places the flag at a 45 deg. angle on the car. This enables the foreman, general inspector or executive to determine at a glance whether or not the car forces are being delayed on account of material delivery.

The delivery on repair tracks, especially those handling a large number of repair cars, has been further refined by having the car inspectors and part of the delivery forces, go to work an hour earlier than the balance of the car repair forces.

#### Tractors and Trailers Money Makers

For the purpose of stores delivery, the Chicago, Burlington & Quincy now has a total of 28 power tractors in use, also approximately 20 trailers of various types for each tractor in service. The type of tractor and trailers have been determined in accordance with the local conditions under which they are operated. With the use of tractors, trailers and an organization under the stores department to take care of the delivery of material to and from the shops, it has been possible to concentrate deliveries so that in one trip deliveries can be made to a number of mechanics.

On some of the repair tracks trouble was encountered from delays in the mill sawing of siding, lining and decking. This made the delivery expensive and frequently delayed the car men. To improve this condition gasoline-operated portable cut-off saws have been installed in the lumber yards at several points. The saw is moved to the pile of lumber being used and the lumber is cut to the desired length and then loaded on a trailer. It is then hauled direct to the car where it is to be used. It was formerly the practice to take this lumber from the pile to the mill and frequently it was unloaded in the

mill before it was sawed. After it was sawed car men or car helpers took it from the mill to the car.

#### Large Savings from Power Saws

Where cars are rebuilt on the progressive plan of rebuilding, the delivery on lumber is timed so that the trailer is placed alongside of the car just about the time the lumber is needed and the car men take the lumber off the trailers. Unless this operation is properly timed, the trailer must be unloaded in order to avoid congestion. This loading and sawing of lumber is handled on a piece work basis, the additional cost of handling by the store department ranging from 10 cents to 30 cents per 1,000 ft. At one place where one of these saws cost \$395 a check on results indicates a saving of \$3,600 per year.

All delivery men in roundhouses wear red caps. All delivery men in general repair shops and on repair track wear red and white buttons 2¼ in. in diameter and each button is numbered. The working men know who to look to for their material and if there is any question about the men doing inefficient work it is easy to correct it.

### B. & M. Transportation Company

THE Boston & Maine Transportation Company is the organization under which the Boston & Maine Railroad, as announced last week, is conducting a special freight service between Boston on the south and Lowell and Lawrence on the north with pick-up service at the starting point and store-door delivery at destination.

## Through Delivery Rates

TO AND FROM BOSTON

FROM AND TO LOWELL AND LAWRENCE

	Terminal	Zone No. 1	Zone No. 2	Zone No. 3
Under 1000 lbs.				
	Rates per 100 lbs.			
Terminal	\$0.20	\$0.24	\$0.31	\$0.35
Zone 1	.30	.34	.41	.45
Zone 2	.38	.42	.49	.53
Zone 3	.43	.47	.54	.58
1000 to 4,999 lbs.				
Terminal	\$0.19	\$0.23	\$0.28	\$0.32
Zone 1	.28	.32	.37	.41
Zone 2	.34	.38	.43	.47
Zone 3	.39	.43	.48	.52
5000 to 9,999 lbs.				
Terminal	\$0.18	\$0.22	\$0.26	\$0.29
Zone 1	.26	.30	.34	.37
Zone 2	.31	.35	.39	.42
Zone 3	.35	.39	.43	.46
10,000 lbs. or over				
Terminal	\$0.17	\$0.21	\$0.22	\$0.25
Zone 1	.24	.28	.29	.32
Zone 2	.27	.31	.32	.35
Zone 3	.30	.34	.35	.38

## Local Cartage or Store-Door

Delivery rates to and from Terminals at  
BOSTON—LOWELL—LAWRENCE

From and to	Min. Charge	Less than 1,000 lbs.	1,000 to 4,999 lbs.	5,000 to 9,999 lbs.	10,000 lbs. or over
Rates per 100 lbs.					
Boston Zone 1	\$0.50	\$0.12	\$0.09	\$0.08	\$0.07
" " 2	.60	.18	.15	.13	.10
" " 3	1.00	.23	.20	.17	.13
Lawrence Zone 1	\$0.40	\$0.09	\$0.08	\$0.07	\$0.06
" " 2	.50	.16	.13	.11	.07
Lowell Zone 1	\$0.40	\$0.09	\$0.08	\$0.07	\$0.06
" " 2	.50	.16	.13	.11	.07
" " 3	.60	.20	.17	.14	.10

#### Boston & Maine Trucking Tariff

The plans under which operations have been begun are flexible and a main purpose of the company is to adjust the new facilities to the needs of shippers and consignees.

The special tariff which has been issued for this 26-mile service, a copy of which, reduced in size, is shown here-



with, names rates from station to station as well as from door to door; and, apparently, the carrier reserves the option of carrying freight through from city to city by automobile or putting it into railroad cars in the customary manner, whichever of the two methods may better promote speed and economy. The transportation of freight by auto-truck to and from way stations on the railroad between Boston and the other two cities has not yet begun.

The rates, as well as the other arrangements, are tentative and, apparently, subject to increase or decrease if found to be unfair or in any way inconsistent with complete and adequate service.

In Boston the Frost Forwarding & Transfer Company is to do the trucking; for the line haul by motor truck between the cities, Stone's Express Company and the Massachusetts Motor Trucking and Garage Company have been engaged; at Lowell the trucker is M. F. Smith and at Lawrence, Robert Crockett, Jr.

The superintendent of trucking at Boston is A. S. Larrabee, and solicitation of business will be under R. G. Thompson. The card making the announcement and showing the rates for transportation, is a folder of pocket size and the tariff (here reproduced) occupies the inside pages. The tables provide for all possible combinations. For example, in the first line of the table, 20 cents, 19 cents, 18 cents, etc., represent the rate from station to station; 30 cents, 38 cents, 43 cents, etc., include cartage at one end; and 34 cents, 41 cents, etc., include cartage at both ends.

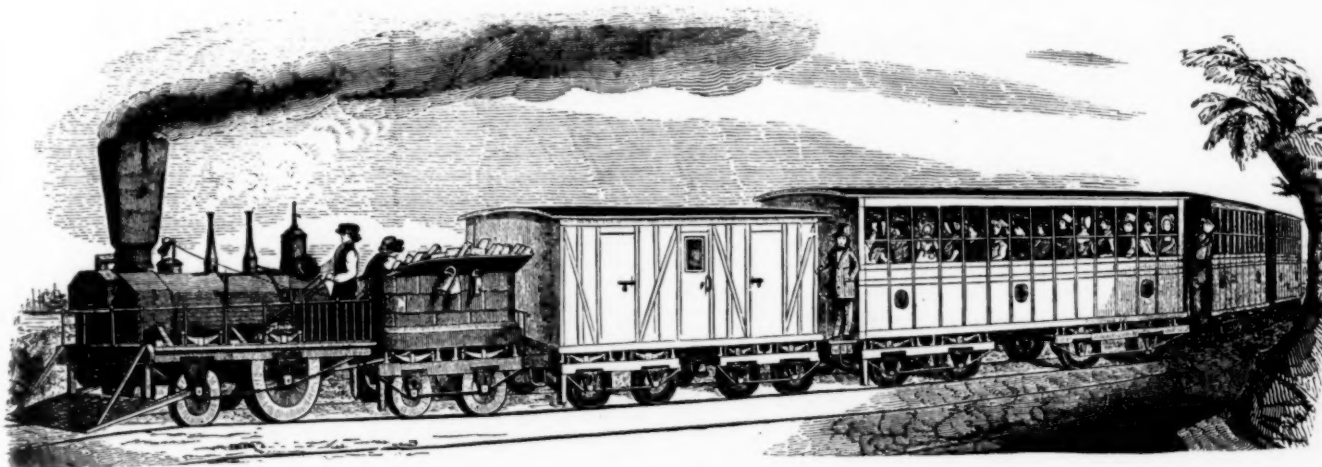
The lower table includes no city-to-city service. The

not apply; though special rates will be made for these on application. These exceptions include machinery, furniture and feathers; baskets, pianos and paper stock; bricks, billiard tables and bathtubs; millinery goods and showcases; also pop corn, ice cream cones and various other things.

## "The First Through Line"

THE picture of a passenger train with a cab-less locomotive, which is herewith shown, may be said to be a bit of the history of the first American railroad which was operated as a "through line." This characterization of the Boston & Albany is taken from Hadley's review of railroad history in his book "Railroad Transportation," one of the railroad classics of the last century. Albany and Buffalo were connected about the same time as were Boston and Albany, but by an aggregation of local lines. The Boston & Albany (then the Western Railroad) "had, however, the distinction of being operated as an important through route, not supported mainly by local traffic." The people of Massachusetts, in planning a railroad from Massachusetts Bay to the Hudson River, had very definitely in mind the importance of creating, in connection with the Erie canal, a means of cheap transportation between Boston and Lake Erie.\*

Our illustration is a copy, reduced about one fourth in width and height, of a wood cut which was printed at Al-



On the Boston & Albany, at Greenbush (East Albany) N. Y., A. D. 1842

minimum charge shown in this lower section applies to all transactions in both the upper and lower parts of the tariff. For example, reading from the upper table, the price for a single shipment, weighing 100 lb., from Zone 1 in Boston to Zone 2 in Lowell, is 41 cents; of which apparently 20 cents would be apportioned to what corresponds to the line haul, leaving 21 cents to be divided between the carter at the pick-up station and the carter at the destination; but by the minimum rule 50 cents would be charged for each cartage, making the total  $.50 + .50 + .20 = \$1.20$ .

The outer zone at Boston includes the whole or a part of the following cities or towns: Watertown, Belmont, Arlington, Somerville, Medford, Malden, Everett, Revere, Chelsea, Boston (East Boston); or a radius of four or five miles. This service is designed for those classes of goods which are conveniently and economically handled by trucks, on regular schedules; and one page of the folder contains a list of exceptions, in which are named 100 or more commodities to which the tariff does

bany in 1874, and probably was made a good while before that. The engraver's name was Pease, and he had for his guide a daguerreotype which was made in 1842, under the direction of Charles Van Benthuyzen. The title (put on in 1874) reads "Express Train on the Western Railroad; Afternoon train between Albany and Springfield." It is safe to say, however, that the train stopped at every station. The road had then been open less than a year. The publisher of the 1874 placard notes the following names: Stillman Witt, superintendent at Albany; Thomas W. Allen, master mechanic; D. S. Wood, engineer; Horace H. Babcock, ticket agent, and John B. Adams, conductor. Adams was in charge of the same train as late as 1873, running from Springfield to Albany in the forenoon and back in the afternoon. The second track, shown in the foreground is, no doubt, a side track.

\*The first train from Boston to Albany was run in December, 1841. The railroads extending from Albany through central New York to Buffalo reached Lake Erie in 1842. The Baltimore & Ohio had then been completed as far as Cumberland.

# O. P. Van Sweringen Before I. C. C.

## *Nickel Plate chairman describes acquisition of 9,000-mile railroad system*

WASHINGTON, D. C.

THE hearing on the Nickel Plate unification application, before Commissioner Meyer of the Interstate Commerce Commission, was adjourned on May 29 to June 17, on account of other engagements of counsel and the commissioner, after O. P. Van Sweringen, chairman of the New York, Chicago & St. Louis, had occupied the witness stand for a day and a half in explanation of the methods by which he and his brother had acquired control of over 9,000 miles of railroad and the considerations which had governed the terms offered for the exchange of the securities of the various companies. Mr. Van Sweringen told an interesting story of how, starting in 1916 with only \$520,000 in cash and some Cleveland real estate property for collateral, they had financed the acquisition of the old Nickel Plate company and the Lake Erie & Western and the Clover Leaf, which were later consolidated with it, and how, by the further use of credit, based on the increasing value of the securities under their management, they had expanded their operations and acquired control of the Chesapeake & Ohio, Erie and Pere Marquette, which they desire to lease to a new Nickel Plate company with a view to eventual complete consolidation. He said that he and his brother, M. J. Van Sweringen, have believed that they are engaged in a constructive undertaking, which will promote the public interest, and that if this belief is not confirmed by experience and knowledge of the commission they realize that it would not last and would have no desire to be permitted to do it. He also said that they had tried to be fair to every interest involved and want to feel, when the case is over, "that the commission has either found the proposal fair to all, or has so modified it that the most obscure and unrepresented stockholder in any of these properties will have been as fairly treated as larger interests which are here to represent themselves."

The entire session on May 29 was devoted to an exhaustive cross-examination by Henry W. Anderson, representing minority stockholders of the Chesapeake & Ohio, who inquired in the utmost detail as to the various transactions involved and demanded the production when the hearing is resumed, of all the papers, such as memoranda, correspondence and data, involved, apparently in an effort to show what assistance the Van Sweringens had and that they stand to make large profits. He showed, and Mr. Van Sweringen confirmed it as substantially correct, that the original investment had already shown a profit of nearly \$17,000,000 on the Nickel Plate stock alone, based on the market quotation of May 28. Mr. Van Sweringen emphatically denied that he and his brother were in any way acting as the "little brother" of the New York Central, or that they were engaged in speculation in shares and said that all sources of gain to them were by improvement of the shares purchased as the result of new management and unification of separate properties. He also went into detail to defend the justice of the proposed terms of exchange for the stocks of the Chesapeake & Ohio, Erie and Pere Marquette as embodied in the offer of August 20, 1924. Mr. Van Sweringen said in part:

In this connection a brief reference to the early activities of my brother and myself may be justified by the fact that this is the first large unification plan considered by the commission since the passage of the Transportation Act. That the country has complete confidence in the Interstate Commerce Commission and

will accept its judgment goes without saying, but I regard it as of the highest importance that, in this first case, there should be no undisclosed relationship or reservation upon which even a suspicion could rest that the transaction was not conceived and carried out in the public interest, with a determination to be fair and just to every interest involved. The only kind of a railroad I am interested in is one which deserves and has the informed sympathy of the people it serves, and I hope this inquiry will be so full and the commission's judgment so clear that no reasonable doubt will remain.

### **Purchase of Nickel Plate Stock on Credit**

It was in 1916 that we made a contract with the New York Central Railroad Company for the purchase of the majority of the stock of the then New York, Chicago & St. Louis Railroad Company. The purchase price was eight and a half million dollars. It has been the subject of some public comment that we did not have eight and a half million dollars or anything like that amount and therefore we must have represented someone else. The favorite suggestion was that the "someone else" was the New York Central Railroad Company and that we were the "little brother", so to speak, of that railroad. The comment was that the New York Central was obliged to sell the property, and, fearing its competition if sold and developed, had adopted this subterfuge method of continuing in the control of the property.

Our relations with the New York Central people have always been pleasant. We are probably better known to them because of this and later transactions than we are to some other railroads who are also our competitors, but I hope it is not necessary for us to quarrel with them to establish that this "little brother" idea is unfounded in fact.

That we did not have the eight and a half million dollars is all too true, but we did not require it all at one time. Six and a half million dollars of the purchase price was deferred over a period of years with the stock pledged as collateral for its payment. The two million dollar cash down payment, I assure you, was hard enough to raise. We had accumulated some property as a result of our real estate operations in and about Cleveland, but we had not reached the stage where we had two million dollars in the bank. Our method of providing it was the organization of the then Nickel Plate Securities Corporation, with the creation of common stock and seven per cent cumulative preferred stock. We transferred to this Securities Corporation all our rights of purchase of the railroad and certain other real estate securities to suitably collateralize or further secure the investment risk of the stockholders that we proposed to interest in the purchase of this corporation's shares. We then set about to sell enough of the preferred stock at par to our friends and business associates in and about Cleveland who we felt had sufficient confidence in us to invest with us. We very frankly retained control of three-quarters or thereabouts of the common stock, contributing the rest with the preferred so that we might realize par for the latter. There was no railroad interest or railroad officers' interest in these purchases.

After Mr. Bernet took charge of operation for us when we bought the property, he virtually re-made the railroad in respect of its motive power and rolling stock, strengthening bridges here and there where necessary and lengthening sidings so that trains theretofore limited to thirty or thirty-five cars were thereafter made up of sixty to seventy cars and, with improvements from time to time since, this latter number has been increased to equal the operations of our competitors and the standard railroads of the country. The result of all of this was a prompt reflection in the earning power and the net of the property, so that it was not inconsistent very soon to meet with regularity not only dividends on the preferred stocks, but the common stock as well, with a very considerable surplus accruing in the treasury.

We retained control of the railroad through the Securities Corporation, and, as the railroad prospered, our credit position improved accordingly, and the worth of our assets increased. We naturally began to have a decided interest in railroad development, and it became clear to us that there was a constructive opportunity in it.

### **Clover Leaf and L. E. & Western Added**

The Transportation Act, providing for the grouping of the railroads of the United States into a limited number of systems, also appealed to us as a further constructive opportunity con-



sistent with public policy. We had seen what was possible to be done with the Nickel Plate, and we believed it could be done with other railroads of like character. This commission's tentative plan for groupings had been made public in the summer of 1921, and we began to devote a great deal of time to a study of the railroads of the Eastern Region which this commission had grouped, presumably as a suggestion for consideration by the railroads and the public involved.

About this time the Toledo, St. Louis & Western Railroad (the Clover Leaf), then in receivership, was heading out from its entangling undertaking with the Chicago & Alton stock purchase, and we concluded this was the railroad we should have for an entrance into St. Louis and Toledo, and through its ownership of one-half the stock of the Detroit & Toledo Shore Line thus put us into Detroit.

The commission's suggestion in its tentative plan to segregate the Lake Erie & Western Railroad from the New York Central and to group it with the Nickel Plate provided the basis for an argument with the Central people that they should also dispose of this property.

We began negotiations to acquire both these properties. I distinctly recall practically an all night negotiation for the dominating interest in the Clover Leaf. There were seventy odd thousand shares in this one block, and the owners did not desire to have the money for its sale, but were willing to take a long time payment obligation upon the price fixed, approximately \$2,750,000 provided our interests would acquire enough more of the stock to make a majority control and pledge these additional shares so purchased with those bought from them as collateral for the payment of the obligation. Within a week's time, or thereabouts, we had the extra shares, and they cost us about three quarters of a million dollars. Our majority control thus cost us, in round numbers, \$3,500,000, and consisted of 60,500 shares of common and 39,890 shares of 4% preferred stock, both having voting power.

Our trading having started on the Lake Erie & Western, we finally brought this to a head, and the New York Central sold us their majority shares of this company for \$3,000,000. They required that we pay \$500,000 in cash, and gave us five years within which to pay the remainder. They, in turn, took back the stock sold to us as collateral security for the payment. Of this purchase, 59,400 shares were common and 59,300 shares preferred, both voting.

It was not especially difficult at this stage in our undertakings to provide \$1,250,000, the necessary initial cash for both these railroads. The Clover Leaf quickly demonstrated its worth, as a reference to its performance after its purchase will indicate. It came out of the receivership in much better fashion than was generally realized. It had substantial treasury assets in the way of cash and other securities, including its half interest in the Detroit & Toledo Shore Line Railroad.

Within a short time we had convinced ourselves that an alliance of the Nickel Plate and these two railroads would be beneficial because of the reciprocal advantages and natural trends of traffic and the opportunities for further development. We concluded to unify these properties, and we completed, in the year 1923, the consolidation of the three railroads with two subsidiaries known as the Fort Wayne, Cincinnati & Louisville Railroad Company, belonging to the Lake Erie & Western, and the Chicago & State Line Railroad Company, the western end of the Nickel Plate. Having done this, we applied to this commission for authority for the issuance of the securities of the new company to be given in exchange for the stock of the old companies, and the authority was granted. The result is the present New York, Chicago & St. Louis Railroad Company, one of the five railroads whose property is sought to be unified in this proceeding.

### Holding Companies

To go back a ways, the acquisition of the Toledo, St. Louis & Western was made by The Clover Leaf Company, organized for this purpose, the stock of which was all owned by The Vaness Company, the personal holding company for many of the assets of O. P. and M. J. Van Sweringen.

The acquisition of the Lake Erie & Western was made by The Western Company, organized for the purpose, and the stock of which was also owned by The Vaness Company. When the Nickel Plate and its subsidiary were consolidated with these roads and their subsidiaries, the control still remained with O. P. and M. J. Van Sweringen as the majority owners of the stock of the Nickel Plate Securities Corporation and The Vaness Company. Since then the Nickel Plate Securities Corporation has been extinguished by consolidation with The Vaness Company, and we continue to own considerably more than a majority of The Vaness Company common stock.

The new New York, Chicago & St. Louis Railroad Company had been put together with a reduction in aggregate outstanding capital stock in the hands of the public of over thirteen million dollars. Only one class of new preferred stock was issued. We

exchanged the first and second preferred shares of the old company, par for par, in the new preferred. Having provided that these shares should have a preferential position as to assets and cumulative dividends, we arranged that their voting power should be exercised only upon the contingency of the non-payment of dividends. The other stockholders were agreeable. We were not speculating in shares. We were upbuilding a railroad, and we wanted to know that our policies would prevail in its development, and this aided in that assurance.

We had a feeling, and still have, that one of the most unfortunate conditions in the railroad world is the absence of parental interest, guidance and encouragement—someone to be responsible for the policies and pursuits of the company through having the major stock interest. If we could not control the properties to the extent necessary to assure continuity of policy, we did not want to be interested in them. We have had a natural pride in feeling that we were constructive. We have tried to look into the future and be progressive, and we wanted a free hand in doing so.

### Unnecessary Shares Disposed Of

When the exchange of shares into the new company was completed, The Vaness Company and we, with shares accumulated from time to time, had, all told, 188,286 shares of preferred and 191,700 shares of common stock of the new company. Our "from time to time" purchases to which I refer had been 14,500 common shares of Clover Leaf and 33,700 preferred and 7,600 common shares of Lake Erie & Western, 27,125 shares of new Nickel Plate preferred and 2,100 shares of new Nickel Plate common at a cost nearing \$6,000,000.

We did not require the preferred shares to continue in control of the company, and we wanted to liquidate some of our purchase obligations. We therefore sold these, which of course accrued to us by reason of the exchange on exactly the same basis as every other stockholder. We had 188,286 shares, and we realized an average of 81½ per share. As we had an excess above a majority of common stock, we also sold 27,000 shares of this at a net average of about 70 per share. The minority stockholders were not required to participate in the new shares if they did not favor the plan, and a few who did not do so took their settlement in cash under an old statute in Ohio which gave them an excessive price. That statute has since been repealed.

### No Sacredness to Tentative Plans

Before the tentative plan of this commission was promulgated, Dr. William Z. Ripley was engaged by the commission to make recommendations of groupings. There was also a study made by Mr. John E. Oldham for the Investment Bankers Association. In the light of the fact that these plans, as also the commission's plan, were clearly pronounced as tentative or suggested plans, it did not seem inconsistent that we should give independent study to what we thought would fit all our conditions best and still preserve the alliance of weak and strong railroads, trends of traffic, natural interchanges and other things inherent in the other suggested plans. The variation between this commission's plan and Dr. Ripley's plan, simultaneously published by this commission indicated, as we saw it, that there was no sacredness to the tentative groupings as made.

This led us, as advocated to this commission in its hearings on general railroad consolidations, to the conviction, as briefly set forth in a statement by counsel for the Nickel Plate at one of those hearings, that the public interest would be better served in still another grouping than any of those theretofore tentatively proposed, though identical as to several of the properties involved in the groupings of this commission and of Dr. Ripley and of Mr. John E. Oldham. The same principles generally have been followed in all of the plans.

There are other railroads we will desire to acquire to fully round out the Nickel Plate System, as we see it completed, but those proposed by us now to be unified, in our judgment and by figures and facts brought forward in this hearing in support of our present undertaking, should function well in the service to be rendered to the shippers and the public, and competitively insofar as the immediate territory served is concerned. The proposed system will be financially able to provide the necessary capital for additions and betterments in keeping with its necessities. This grouping study, briefly, is our explanation as to why we have become interested in the Erie and Pere Marquette railroads, our entrance into the Chesapeake & Ohio property having preceded somewhat these later conclusions, we having theretofore decided that the Nickel Plate and the Chesapeake & Ohio would supplement each other advantageously.

Now, as to how we acquired the control of the Chesapeake & Ohio. Evidence has been introduced as to the number of shares owned by the present New York, Chicago & St. Louis Railroad Company, namely, 155,000 shares of the par value of \$100 each, the cost of acquisition of these shares, how the money was provided and our relation to its purchase. Seventy thousand of these shares, as has been testified, were of the block purchased from the

Huntington interests who were responsible for the building of part of the railroad and formerly for its management and operation.

O. P. and M. J. Van Sweringen's relation to the purchase of these seventy thousand shares was limited to the payment by them of \$20 per share to the Huntington family, thus making the cost to the Nickel Plate \$80 per share.

At the time of the purchase of these shares, Mr. H. E. Huntington, who was chairman of the Chesapeake & Ohio, wished to resign, and all the directors except Mr. W. J. Louderback and Mr. W. J. Harahan were gentlemen directly associated with him or nominees of his, so that it was natural that they would want to resign from the directorate when their financial interest in the property terminated.

Having the confidence we did in the qualifications of the directors of the Nickel Plate, was not their experience and fitness equally good for the Chesapeake & Ohio and for the Hocking Valley, or any other railroad properties for which we might be responsible? We thought so, and still do. As we have heretofore stated, it is our aim to control by ownership a majority of the common stock of the corporations for the success of which we are responsible. These railroad operations have become our principal occupation.

We make no apologies for wanting to control the policies of the properties for whose management we are responsible, and in which we have a larger investment than any other stockholder in the shares which are first to suffer by reason of a mistake in policy, an error in judgment or mismanagement of the company. All other classes of shareholders and investors have their investment and their income protected ahead of our position.

Thus those now serving on the Chesapeake & Ohio board were invited by us to accept those duties. The vacancies on the Hocking directorate, through the resignation of Mr. Huntington and his associates, were filled in the same way at our invitation and by the same gentlemen who were the directors on the Nickel Plate board.

We have not yet fully disclosed our ownership of Chesapeake & Ohio stock. Controlling the Nickel Plate as we do, we, through that medium, control the vote of the shares it owns. Outside of the Nickel Plate we have larger holdings in the aggregate than those of the Nickel Plate, in fact, with the Nickel Plate, a substantial control of the stock. With the exception of the three thousand shares purchased from the Huntington family, we have bought our holdings in the open market, and they have cost us the prevailing market price at the time of purchase, averaging about \$92.50 per share, not reckoning our loss of \$1,400,000 on the Huntington shares that went direct to the Nickel Plate. We have assembled these over a considerable period of time, as we did also our holdings of Pere Marquette and Erie Railroad, which we acquired in the same manner, and which were financed principally by us on loans upon the stock purchased.

Our total holdings through The Vaness Company amount to 174,800 shares of Chesapeake & Ohio Railway Company common stock costing about \$16,180,000; 30,000 shares of Pere Marquette Railway Company common stock costing about \$1,900,000 and 24,700 shares first preferred, 52,600 shares second preferred and 387,000 shares common stock of the Erie Railroad Company costing about \$11,200,000. There is now in the record testimony with regard to the amount and cost of the Nickel Plate's holdings of Pere Marquette and Chesapeake & Ohio shares. This cost, it will be observed, is several dollars less per share than the cost of those we purchased, since, owing to our fiduciary relation to the Nickel Plate, we gave it preference in the matter of purchase and at the lowest price of the shares purchased. The Huntington shares of the Chesapeake & Ohio were purchased some time before most of our remaining shares, but the Erie and Pere Marquette purchases, as heretofore stated, were made in furtherance of the unification of these properties as proposed under the pending application.

It should be apparent, but if it is not I now make the statement that all sources of gain to us were by reason of the improvement of the shares purchased and not one dollar by promotion fees or charges, stock manipulation or watering processes—the same as the ratio of gain to all stockholders, and no more. What is more, if this plan is approved by this commission, we will have reduced the aggregate outstanding capital stock by reason of this unification and the former Nickel Plate consolidation about \$125,000,000.

### Financial Aspects of Unification Plan

First, we regarded it as vital for the new company to be assured of earnings sufficient in amount to amply protect the interest requirements on the funded debt structures of all the lessor companies and of the new company combined. Such a result must be had to create a credit standing in the money markets of the world which would enable the new company to provide the funds for its natural growth and necessities.

Second, we regarded it as preferable that the financial structure should provide for one class of preferred stock, rightfully safeguarded and with provision for its issuance serially—a

character of preferred security that would command a ready market to the conservative investor as a medium for funding and refunding a suitable proportion of the new company's financial requirements upon an economical money cost.

Third, we desired, if possible, to so arrange the financial structure of the new company that the equity of earnings for the common stockholders would permit the payment of dividends on such stock at the rate of not less than 6 per cent per annum.

The statement which I made with reference to sale of preferred stock for capital requirements applies with equal force to the common stock of the new company. It is my firm conviction that when economically permitted to do so, the railroads of the country will and must turn more and more to providing their financial requirements by the sale of capital stock.

Computations appearing in our proposal to the stockholders show that for the year 1923 and for the first six months of 1924, the net earnings of the five companies proposed to be unified were substantially sufficient in amount to twice cover the fixed charges of the five companies without any of the benefits, operating economies or savings which in our judgment unification will produce.

The desirability of unification by lease as against control only by stock ownership is definite and important.

Right here perhaps it is well to answer the query heretofore made as to why the leases of the several companies are necessary as the plan contemplates them. Several reasons might be given, but there is one of so definite and restrictive a nature that others seem unnecessary. The rights of the individual stockholders of the several companies intervene to prevent unified operation, accounting and financing. Control of less than all of the stock requires separate operation and organization, eliminating in large measure the very substantial accounting economies and preventing from an operating standpoint the movement of traffic in the manner most economical and beneficial to the unified system.

Under control by stock ownership only, each road must be financed upon its own credit and with regard purely to its own requirements without reference to the desirability or necessity of such financing if there were unified operation. While control by stock ownership is a valuable form of control and is a means toward carrying out the purposes of the Transportation Act, it is not as desirable as control by lease and does not permit of carrying out to the same extent the purposes of that act, looking to economical and efficient transportation.

### Alternatives for Non-Assenting Stockholders

In formulating the proposal and the leases, we had fixed terms for exchange of stock of the present companies for stock of the new company which we believed to be fair and equitable. We recognized, however, that among stockholders numbering many thousands there would be some who would not agree with our judgment. Accordingly, in the formation of the leases we endeavored to provide fair alternatives for such non-assenting stockholders.

We provided that any stockholder who dissented from the exchange terms and who wished to sell his stock for cash could receive, by mutual agreement or, failing that, by arbitration, the average market value of his shares for the six months preceding the stockholders' meeting, excluding in determining such fair market value any appreciation or depreciation in the market values due to the lease or to any other factor which abnormally enhanced or depressed the market prices. It was not our intention that the words "market value" should be used in any restricted sense. We consider this provision the equivalent of "fair value" and are entirely willing that the appraisers acting under the appraisal sections of the lease may regard it in that sense. If the commission feels that the language is doubtful I would be glad to have it made clear in its order.

We also realized that some stockholders might prefer to have their stock valued in a judicial proceeding instead of by appraisal. We have therefore agreed in the lease to pay such non-assenting stockholders for their shares such amount as shall be finally determined by any court of competent jurisdiction.

In order that stockholders who may wish neither to exchange their stock for the new stock, nor to sell their shares pursuant to appraisal, may continue to hold their shares in their present corporation and at the same time provide for a return upon such shares, we have provided in the leases for the payment by the new company to the present corporations of stipulated amounts as rental, the rental being payable as and when dividends are paid by the new company upon its shares. This provision appears in all of the leases except that of the present The New York, Chicago & St. Louis Railroad Company and does not appear in that lease for the reason that, upon its execution, the new company issues its stock which constitutes the entire stock consideration for the leasehold and for the conveyance of the property when physical consolidation is permitted by the proper governmental authorities. In the case of the four other companies, the payments are based upon the number



of shares of the lessor company not owned by the new company, and the new company, as to the shares so owned by it, waives any participation in such payments.

In the case of the Erie, the amount paid in, in respect of the non-assenting shares, is the same amount that would have been paid by the new company as dividends upon its stock if all such non-assenting shares had been exchanged at the exchange ratios.

On the other hand, the Erie covenants in its lease to make a conveyance of its property, when authorized by the proper public authorities, for stock of the new company in amounts fixed by the exchange ratios specified in the proposal.

In the case of the Pere Marquette, Chesapeake & Ohio and Hocking Valley, the rental payments are slightly less than the amounts the non-assenting stockholders would receive by way of dividends if they exchanged their shares at the exchange ratios. However, the terms upon which the properties of such companies may be consolidated with or conveyed to the new company are not fixed but are matters for future agreement and approval by public authorities. Consequently, such stockholders who retain their ownership in their present company will be entitled to have the value of their shares, upon consolidation, fixed by values existing at that time rather than by values existing now. Therefore, such stockholders have not passed to the new company the complete ownership that stockholders who exchanged their stock conveyed, and the reason that they receive somewhat less than the exchanging stockholders is because they have withheld such complete ownership.

In the case of each of such companies, the amount to be received, based upon payment by the new company of dividends of 6 per cent per annum upon its preferred and common stock, is larger than the dividends that the common stockholders have received in their present companies.

In short, our intent was to provide a fair basis of settlement for those who wished to drop out of the enterprise, a fair method of rental payments to the present corporations for the benefit of those who wished to retain their ownership in their present companies, and to accord a full partnership in the new enterprise to those who wish to participate therein.

### Ratios of Exchange

Mr. Van Sweringen then discussed in detail the reasons for the specific bases for treatment of the several classes of shares of the different companies involved. As to the Nickel Plate and C. & R. stock, he said:

I have reserved until this point the discussion of the treatment of the New York, Chicago & St. Louis Railroad Company, the present Nickel Plate, since in that case it is necessary to discuss the consideration paid by the new company to the present Nickel Plate for the lease proposed to be given without separate reference to its preferred stock. For the lease of all the assets, subject to all of the debts, of the present Nickel Plate, except only the stock of the Pere Marquette and the Chesapeake & Ohio held by it, the new company is to deliver to the present Nickel Plate \$25,865,666 of its preferred stock and \$30,406,464 of its common, being respectively the amounts of preferred and common of the present Nickel Plate now outstanding in the hands of the public.

The present Nickel Plate agrees as set forth in the lease, that, when and if authorized by law, the property so leased and the properties of the new company shall be consolidated into one corporation for ownership, management and operation, it shall thereupon convey for a nominal consideration the fee and complete ownership of its leased properties.

This will fix, at the date of the execution of the lease, the consideration to be received by the stockholders of the present Nickel Plate in the event of consolidation and while the Erie lease contains a similar provision, the amounts to be received in the event of consolidation by the stockholders of the Pere Marquette, Chesapeake & Ohio, and Hocking Valley are to be fixed according to the conditions and circumstances as they may exist at the time the consolidation is carried into effect.

From this it will be seen that the basis used for compensation to the present Nickel Plate for the lease of its property and the eventual conveyance thereof in case of a consolidation was the issuance by the new company on a share for share basis of both the preferred and common stock.

A consolidation of the earnings statements of the five railroads proposed to be unified in accordance with the terms of our proposal, applied to the capital structure of the unified system, after giving effect to the conversion into stock of Chesapeake & Ohio convertible 5% bonds of 1946, of which some \$6,000,000 have, since the date of the proposal, been converted, shows that the net earnings available on the common stock of the new company would have been about \$12 per share.

It was our opinion that, subject to the normal variations arising from the periodical swings of traffic, the preferred and common stock of the new company was substantially on all fours with the preferred and common stock of the present Nickel Plate, exclusive

of its investment in the stocks of the Chesapeake & Ohio and Pere Marquette. The consideration was thus fixed by us as an amount of preferred and common stock of the new company equal in amount to the preferred and common stock outstanding in the hands of the public.

### Treatment of C. & O. Common

With reference to the common stock of the Chesapeake & Ohio, we had this problem: At the time the proposal was made, August 20th, 1924, the company had common stock outstanding to the par value of about sixty-five million dollars, but it also had outstanding an issue of bonds, convertible into common at \$90 per share, to the amount of about thirty-eight million dollars. They are convertible at the rate of \$90 bond for \$100 common stock until April 1, 1926, and par for par thereafter until April 1, 1936. This liability for conversion of the Chesapeake & Ohio to the holders of these bonds had to be assumed, and is assumed by the new company, and in all of our computations and considerations of this subject it has been necessary to take into account the fact that while the common stock of the Chesapeake & Ohio at that time outstanding amounted to approximately sixty-five million dollars, it could, and undoubtedly would, be increased at the option of these bondholders by an additional forty-two million.

Among other assets of the Chesapeake & Ohio is its interest in the Hocking Valley. Chesapeake & Ohio owns about 80 per cent of the total outstanding stock. Practically all of this Hocking stock is pledged under the first lien and improvement mortgage bonds of the Chesapeake & Ohio, which bonds are in turn pledged as security for the convertible 5% bonds due 1946 and for certain government loans. In any consideration of the assets of the Chesapeake & Ohio, it was necessary of course to include in those assets, not only the book value of its Hocking stock but its pro-rata portion of surplus of the Hocking Valley properly assignable to the stock of the Hocking owned by Chesapeake & Ohio. We also included in the earnings of the Chesapeake & Ohio a pro-rata share of the earnings of the Hocking Valley, to such extent as these earnings had not been declared as dividends.

Reverting now to the influence of the convertible bonds of the Chesapeake & Ohio in the value of Chesapeake & Ohio stock, I should like to make clear that for the year 1923, net earnings of the Chesapeake & Ohio, including its pro-rata share of earnings of Hocking Valley, were sufficient to pay dividends on the preferred stock of the Chesapeake & Ohio and leave a sum equal to earnings on the outstanding common of between \$13 and \$14 per share. After giving effect to the complete conversion of the convertible bonds, however, it is found that these earnings amounted to between \$10 and \$11 per share on the larger amount of capital stock. We believed that the normal earnings of the Chesapeake & Ohio, including its share of Hocking, could be maintained on a basis equal to \$12 per share on the total issue of Chesapeake & Ohio stock, including therein the stock issued upon conversion.

In fixing the ratio, which would adequately compensate the Chesapeake & Ohio common stockholders and give to them their fair share of interest in the property and earnings of the new company, we came to the conclusion that they were entitled to receive a larger percentage than the par value of their capital stock in the capital stock of the new company and that for a portion of the stock they should receive preferential treatment, in assurance of payment, over the common stockholders of every other railroad, except only the Hocking stock in the hands of the public. To this end we eventually fixed upon the ratio of 110 shares in new company stock for 100 shares of common of the Chesapeake & Ohio, and we proposed that one-half of the stock of the new company to be issued would be preferred and one-half common, that is, 55 shares of each.

From the standpoint of the Chesapeake & Ohio common stockholder, to the amount of 55 per cent of his holdings, we have given him better security, greater assurance and ratio of dividends and a preferential position as to assets and to the extent of 55 per cent of his holdings, we have given him a common stock with substantially equal earnings per share and larger intrinsic worth.

As of August 20, 1924, the Chesapeake & Ohio had outstanding common stock to the amount of \$65,425,725, and convertible bonds to the amount of \$38,073,500, calling for \$42,303,888 of additional common stock. On account of stock outstanding and the stock which could be outstanding by reason of the convertible bonds, the new company obligates itself to issue preferred to the amount of \$59,251,287.64, and common to a like amount.

Under the terms of the proposal, assuming the conversion of Chesapeake & Ohio bonds, the new company issues to the stockholders of the Chesapeake & Ohio, preferred and common to the amount of \$132,936,430.28, or 40.41 per cent of all the stock proposed to be issued, under such conditions.

### Hocking Valley Stock

We now come, naturally, to Hocking Valley stock in the hands of the public, which, for the purpose of this unification, must be treated as a separate interest. The total amount of Hocking

stock not owned by the Chesapeake & Ohio is about 21,000 shares. The funded debt of the Hocking Valley is very heavy and as of December 31st, 1923, amounted to a little over thirty-five million dollars, a debt ratio of over three to one.

It should also be borne in mind that only one-third of the Hocking's mileage, that is, the line between Columbus and Toledo, is of substantial value to the new company or to the Hocking Valley itself. Likewise, that it is largely dependent for its traffic on the Chesapeake & Ohio. In view of these facts, it has seemed to us that we fully compensated the Hocking Valley common stockholder when we gave him a preference over the common stockholder of every other railroad, except only the Chesapeake & Ohio, to the extent of 50 per cent of the par value of his stock, and to that extent assured him of preferential dividends on his Hocking stock equal to \$3 per share per annum, with the opportunity to share equally with other common stockholders to the further extent of 50 per cent of his holdings.

The amount of Hocking Valley common outstanding in the hands of the public is 21,621 shares, and the new company is obligated to issue therefore preferred to the amount of \$1,081,050 and common to a like amount.

Having finally completed the ratio figures, we assembled balance sheets and income statements of the proposed unified company based on these ratios. In a last analysis, here was the final test. We proposed to unify the operations of five railroads, in effect to pool their earnings and to redistribute such earnings to their stockholders by means of the distribution of the capital stock of the new company. As heretofore stated, it was vital to the success of the plan that the capital structure of the new company be such as would appeal, to investors as safe and conservative. We were asking the stockholders to surrender their stock holdings in the several companies in exchange for stock in the unified company.

But of course this unified enterprise has not the hazard of a new or untried business. Its several component parts have functioned in public service for many years, and three of the properties for the last two years have been under substantially common direction.

It remained then, for us to determine whether or not the financial structure resulting from the ratios indicated was one which would enjoy public confidence and credit, and one which would safeguard the financial interest of the several stockholders.

Our computations showed us that:

First—With reference to the bonds of the new company, interest charges would be earned substantially twice.

Second—With reference to the preferred stock of the new company, dividend charges of 6 per cent would be earned substantially three times.

Third—With reference to the common stock of the new company, the proposed dividend of \$6 per share would be earned at least twice.

From the standpoint of the unified company, under the conditions as stated, it will issue its preferred and common stock in the following amounts and ratios:

1. For all of the stock of the Chesapeake & Ohio.....	\$132,936,430	or 40.41%
2. For all of the stock of the Erie.....	76,944,960	or 23.39%
3. For all of the stock of the Pere Marquette.....	60,675,200	or 18.44%
4. For all of the assets of the Nickel Plate proposed to be leased and subsequently conveyed..	56,272,130	or 17.10%
5. For Hocking stock in the hands of the public....	2,161,600	or .66%
Total .....	\$328,990,320	or 100.00%

The ratio of distribution of stock here proposed represents our judgment of two things:

First: What the new or unified company can afford to issue of its own securities in payment for what it gets.

Second: What represents a fair payment to each of the several stockholders in relation to each other.

The result may be tested by many theories, and I have no doubt that different minds will approach the problem from different points of view, leading to variations as one or another element is emphasized. The basis of our proposal is not found in any mathematical formula, but grew out of the foregoing considerations, corrected and guided by all the studies we could make. Value is a matter of opinion and judgment, whether it is applied to land, to railroads or to any other form of wealth. We therefore felt it was essential in any plan for the unification of these properties that we recognize that fact. Accordingly, there is inserted in the plan the provision that any stockholder who does not elect to join in the undertaking may have his stock appraised and shall be entitled to receive the fair value of his stock in money.

No plan could be carried through without the approval of a majority of the outstanding stock. Once that vote has been registered, certainly in a public utility, it has always seemed to me that any stockholder who objected to the undertaking had two practical alternatives—either to agree with the majority or to accept the fair value of his stock in money, and retire.

If there is any fairer or more equitable method of providing for the protection of all parties in interest, assuming that what is proposed to be done is in the public interest, I do not know it. Approximately nine months have elapsed since our proposal was submitted to the thousands of stockholders of the several companies and to the public at large. Nothing has occurred during that time to change my opinion that the terms of the original proposal constitute a fair, just and equitable treatment of all parties in interest.

Mr. Anderson, on cross examination, asked many questions as to the availability of memoranda, letters, preliminary studies leading up to the formulation of the plan, etc., which might be produced but Mr. Van Sweringen said there was no such data, as the plans had been carried on largely by conference and with reference to standard statistical reports, and that the evolution had been gradual. Counsel demanded that he make another search for such papers. After many questions to fix the dates of the various transactions and the names of the persons involved Mr. Van Sweringen was led into a discussion as to how the first \$2,000,000 for the first payment on the Nickel Plate stock was raised. He said that a temporary loan of the amount was obtained from the Guardian Trust Company, of Cleveland and that it was then provided by the sale of preferred stock of the Nickel Plate Securities Corporation. The Van Sweringens bought \$520,000 of this for cash and also received three-fourths of the common stock. Mr. Van Sweringen objected to a reference to this \$520,000 as their original investment, saying that the real estate securities and other collateral were of considerable value. He produced for the record a list of the original subscribers to the preferred stock, who were also given a bonus of common. The notes to the New York Central were all paid off, some before maturity, partly from the sale of the preferred stock of the Nickel Plate.

Finally Mr. Anderson calculated that the aggregate cost to the Van Sweringens and their associates of the Nickel Plate stock and that of the companies consolidated with it was about \$21,000,000 and that they had sold preferred and common stock for \$17,225,300, so that their present holding of 164,700 shares of common had cost them only \$3,374,691 or \$22.90 a share, and the market quotation of \$125 for Nickel Plate stock represented a paper profit as of that date of \$16,812,809. When the hearing was adjourned counsel was engaged in a discussion with the witness of the propriety of depriving preferred stockholders of voting power.

In connection with the appearance of Mr. Van Sweringen as a witness it was announced that Newton D. Baker, of Cleveland, formerly Secretary of War, was associated with counsel for the applicants.

At the hearing on May 28 Edwin F. Wendt, consulting engineer and formerly a member of the board of engineers of the commission's Bureau of Valuation, gave testimony regarding the valuation of the various properties proposed to be included in the system, using the underlying reports of the Bureau of Valuation and bringing them up to date by various adjustments to put them on a comparable basis.

Mr. Anderson asked that the commission issue subpoenas, unless counsel for the Nickel Plate could agree to produce them, for the appearance of a large number of witnesses later in the hearing, including L. F. Loree, Julius Kruttschnitt, W. J. Harahan, George E. Marcy, M. J. Marsden, J. R. Nutt, Otto Miller, Prof. W. Z. Ripley, Charles Hayden, R. C. Porter, and others. Commissioner Meyer asked that he first discuss the subject with W. A. Colston, general counsel of the Nickel Plate, who said he would be glad to do so as to those who were connected with the new company but that as to many of those named he had no control.



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Passenger Train at Maltrata Station. Note Welded Type Poles Made from Old Rails

## Mexican Railway Begins Electrical Operation

*Number of locomotives has been reduced from 23 to 10 and  
schedule speed increased from 7.3 to 12. miles an hour*

By W. D. Bearce

Railway Engineering Department, General Electric Company

ONE of the most important railroad electrifications completed during the past year was that of the Mexican Railway Company, Ltd., between the towns of Esperanza and Orizaba, Mexico. This section of the road is known locally as the Maltrata Incline, and is the limiting grade division of the main line between Mexico City and Vera Cruz. The first electric locomotives were delivered during the summer of 1924, and the service was gradually taken over until all steam engines were displaced in main line service in December. The steam engines used on this 30-mile division were known as the Firley type and were equipped for oil burning. These engines are double ended, have a three-axle driving truck at each end and weigh 150 tons with all weight on drivers. For handling the normal main line business before electrification, 23 of these engines were required.

### Current at 3,000 Volts D. C.

The complete motive power equipment for electric operation includes ten 150-ton 3000-volt direct current locomotives, used for both passenger and freight work. On account of the severe grades (4.7 per cent ruling, with a maximum of  $5\frac{1}{4}$  per cent) and the heavy curvature, ranging from 12 to nearly 16 degrees, the speeds in this 30-mile section are limited for both passenger and freight work.

In the substitution of electric locomotives for steam on this road there are several unusual conditions. First, the steam engines replaced have identically the same weight as the electric locomotives now in use; second,

they have all weight on driving wheels; and third, they operate equally well in either direction. In making the substitution, nevertheless, 10 electric units are replacing 23 steam.

The two principal reasons for the greater capacity of the electric locomotives are approximately double speed in service on the grades, and the higher percentage of availability. Whereas the electric locomotives are available approximately 90 per cent of the time, the steam locomotives would ordinarily be available only about 30 per cent of the time. It has further been found that one electric locomotive can handle the normal passenger train of eight cars on the grade where two steam locomotives were formerly used. This is partly due to lack of steaming capacity for the long continuous pull, and partly to the faster schedule for passenger trains. The greater continuous capacity of the electric locomotives has also made it possible to handle heavier freight trains with two electrics than was possible with two steam engines. Where two steam engines handled a 360-ton train, two electric engines are now handling a 660-ton train at a higher speed.

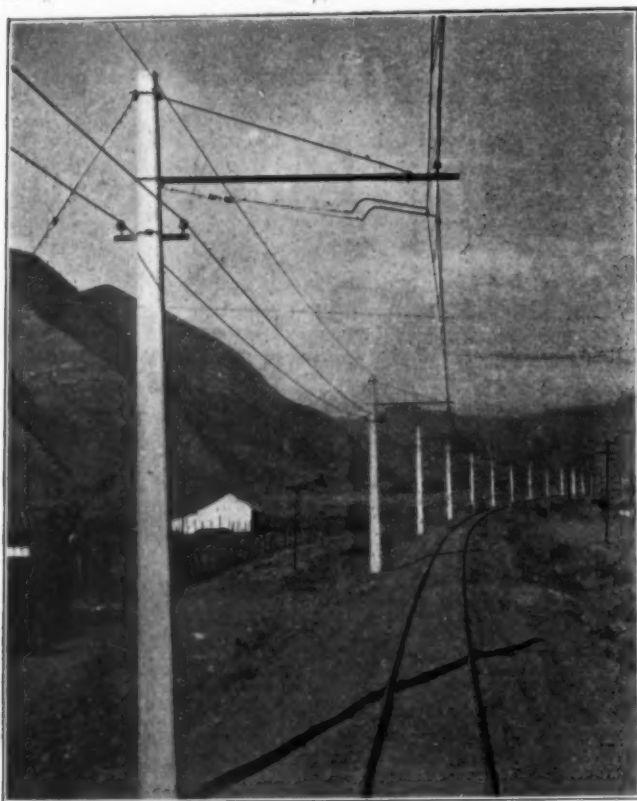
### Great Reduction in Running Time

An analysis of the operating speeds on the up-grade run shows, for example, that one of the passenger trains which formerly required two hours and 50 minutes for the 30 mile run is now handled in one hour and 50 minutes, an increase in schedule speed of from 10.2 to 16 miles per hour. A typical freight run shows a decrease in running time of from four hours to two hours

and 25 minutes, or an increase of schedule speeds from 7.3 to 12.1 miles per hour.

While it was not expected that much improvement in speed would be shown on the down hill run, as a matter of fact, the running time of most of the trains has been reduced. This is due to the elimination of stops for fuel and water and for cooling wheels and brake shoes. It will be appreciated that the schedule speeds above mentioned require an actual running speed, not including stops, approximately double that of steam.

The officers of the road have expressed themselves as highly gratified with the operation of the electrical equipment. The initial operation of the electric locomotives indicates a vast improvement in operating costs over the oil burning steam locomotives. These reductions include saving of power over fuel, saving in brake shoes and wheels due to regeneration, and a general reduction in cost of maintaining equipment due to easier handling.



View of the Right-of-Way at Santa Rosa, Showing Bracket Type Concrete Poles and Twin Trolley

A big reduction in the wage item of operating expense is also predicted, as a result of the increased speed of train movement.

The entire 30 miles is fed from a single substation located at Maltrata. The equipment in this station has operated without interruption since the initial electric operation.

The overhead is of the twin conductor catenary type, using both concrete poles and a steel welded type made from old rails.

All of the equipment for this electrification, including the electric locomotives, the 6,000-kw. substation, overhead line material and bonding, was furnished by the General Electric Company. The Puebla Tramway Light & Power Company, which furnishes electric power for this road, has also purchased from the General Electric Company a 11,250-kv-a. water wheel driven generator as additional equipment to its Tuxpango plant.

## Freight Car Loading

WASHINGTON, D. C.

**R**EVENUE freight car loading in the week ended May 23 amounted to 986,209 cars, an increase of 1,293 cars as compared with the week before and of 67,985 cars as compared with the corresponding week of last year, although it was a decrease of 29,323 cars as compared with the corresponding week of 1923, when 40,848 more cars of coal were loaded. As compared with last year, increases were shown in all districts except the Central Western, where there was a considerable falling off in livestock. Increases were also shown in all classes of commodities except livestock. Livestock loading was 5,719 cars less than that of last year, but coal loading showed an increase of 12,465 cars, ore loading an increase of 7,374 cars, merchandise an increase of 9,284 cars, and miscellaneous freight an increase of 41,477 cars. As compared with 1923, however, decreases were shown in all classes of commodities except grain and grain products, merchandise and miscellaneous. The summary, as compiled by the Car Service Division, follows:

### REVENUE FREIGHT CAR LOADING

Week Ended Saturday, May 23, 1925

Districts	1925	1924	1923
Eastern .....	236,707	218,719	253,565
Allegheny .....	201,866	188,865	231,056
Pocahontas .....	49,177	38,499	42,832
Southern .....	142,523	133,021	137,405
Northwestern .....	154,703	142,736	157,822
Central Western .....	135,686	136,364	136,356
Southwestern .....	65,347	60,020	56,496
Total Western .....	355,936	339,120	350,674
Commodities			
Grain and Grain Products .....	38,622	37,870	35,648
Livestock .....	26,641	32,360	31,304
Coal .....	151,548	139,083	192,396
Coke .....	9,459	8,706	15,010
Forest Products .....	75,844	74,245	79,246
Ore .....	62,775	55,401	70,153
Mdsc. l. c. l. ....	258,086	248,802	243,802
Miscellaneous .....	363,234	321,757	347,993
Total .....	986,209	918,224	1,015,532
May 16 .....	984,916	913,201	992,319
May 9 .....	981,379	908,203	974,741
May 2 .....	981,711	913,550	961,617
April 25 .....	959,225	878,387	962,578
Cumulative total, 21 weeks .....	19,421,103	18,739,419	19,025,215

The freight car surplus for the period May 15-22 was 327,216 cars, including 134,669 coal cars and 142,890 box cars. This was a reduction of 3,217 cars in a week. The Canadian roads had a surplus of 33,845 cars, including 30,300 box cars.

### Car Loading in Canada

Revenue car loading at stations in Canada in the week ended May 23 totalled 50,952 cars, an increase over the previous week of 826 cars. Grain loading improved in the West but coal loading continued light. Lumber and pulpwood also showed increases and other commodities showed only small changes. Compared with the same week last year which contained a holiday the decrease in the total was 2,013 cars. Grain loading was lighter by 3,676 cars and coal loading by 2,171 cars, but merchandise was heavier by 1,836 cars and miscellaneous 882 cars.

Commodities	Total for Canada			Cumulative totals to date	
	May 23, 1925	May 16, 1925	May 24, 1924	1925	1924
Grain and grain products....	5,489	4,918	9,165	128,631	166,077
Live stock .....	1,968	2,127	2,148	46,479	45,580
Coal .....	1,989	1,911	4,160	85,023	100,866
Coke .....	191	184	154	6,042	5,146
Lumber .....	4,205	4,090	3,880	67,205	73,554
Pulp wood .....	2,047	1,588	2,055	69,336	71,606
Pulp and paper .....	1,830	2,091	1,998	44,000	43,898
Other forest products .....	2,683	2,930	1,958	63,432	60,348
Ore .....	1,507	1,257	1,122	25,283	21,806
Merchandise L. C. L. ....	15,985	16,000	14,149	309,069	285,787
Miscellaneous .....	13,058	13,030	12,176	226,021	229,474
Total cars loaded .....	50,952	50,126	52,965	1,070,521	1,104,142
Total cars received from connections .....	33,196	32,187	30,303	695,812	712,504



# Final Sessions of Fuel Convention

*Addresses and reports on mechanical subjects followed  
operating subjects reported last week*

THE International Railway Fuel Association closed one of the most successful and most largely attended conventions in its history on May 29 with the election of the following officers to serve for the coming year: President, J. W. Dodge (I. C.); vice-presidents, E. E. Chapman (A. T. & S. F.), J. E. Davenport (N. Y. C.), and W. J. Tapp (D. & R. G. W.). The following were elected members of the Executive Committee to serve for two years: W. G. Black (N. Y. C. & St. L.), T. F. Carbery (M. P.), Carl B. Smith (B. & M.), and J. J. Stahl (Southern). C. H. Dyson (B. & O.) was elected to serve one year on the Executive Committee. The vote to indicate the preference of the membership

for the place of holding next year's convention resulted in a majority in favor of Chicago. The final decision in the selection of the meeting place, however, rests with the Executive Committee. The Executive Committee has already announced May 11 to 14, inclusive, as the tentative dates for next year's convention, subject to revision to avoid possible conflict with other meetings.

Several of the important papers and addresses presented during the early sessions of the convention, particularly on the day set aside for the discussion of operating subjects, appeared in last week's issue. Abstracts of some of the other papers and reports dealing more particularly with mechanical subjects are given below.

## Fundamental Fuel Factors

By G. M. Basford  
G. M. Basford Company

To produce maximum ton-miles per hour per locomotive, per unit of total cost is the task of today. This means moving more tons faster and cheaper. It means improvement of the locomotive as a power plant to the upper limit of our knowledge, experience, vision and courage and then immediate replacement of wasteful locomotives with money-making locomotive power plants.

Hauling heavier trains faster increases the speed of operation. Increasing average freight speed increases the capacity and economy of operation of the road. It defers additional tracks. It demands high horsepower which can be and must be had at lower cost. To provide high cylinder horsepower is comparatively easy. To supply enough snappy steam for continuous high cylinder power was the problem that waited for years to be solved.

Careful attention has been given to the development of capacity for starting heavy trains. Splendid results have been obtained. This has been far from mistaken policy. The work done to raise the starting end of the drawbar-pull speed curve revealed the need for and opened the way to raise correspondingly, the speed portions of the curve.

### The Locomotive as a Whole

Study of locomotives recent and less recent, indicates no lack of engine horse-power, but a real deficiency in steam making power, compelling wastefully high rates of combustion. Resort to double heading frequently comes from the need for two grate areas rather than two sets of cylinders. We face again the same problem that we faced 30 years ago. Then power at speeds was had at the expense of high rates of combustion and at best was limited by grate areas. This brought wider fire-boxes. Heavy back ends of boilers brought the trailer truck. Rates of combustion are again excessive. Greater power at speeds is needed and additional weight accompanying larger grates must be divided between two trailer axles. The four-wheel trailer unit was developed by combustion engineers to remove the limit to further locomotive furnace progress, which means the limit to further locomotive progress.

It is fortunate for fuel conservation that more thought

is concentrated on improvements in locomotives as complete units than ever before. A change has come. Standards have been raised. Lima Locomotive Works has produced startling results in its development of the 2-8-4 type. The American Locomotive Company has brought forward the three cylinder principle. The Baldwin Locomotive Works is engaging its great resources in locomotive improvement, including development of the Diesel locomotive. J. E. Muhlfeld has worked out high boiler pressure combined with compound cylinders and the water tube firebox. One of our great railroads is operating 600 locomotives with marked fuel economy by aid of limited full gear cut-off.

Single factors for fuel efficiency are numerous and very important. Space permits only brief comment on some of these elements for co-ordinated design for high power with fuel conservation.

### Steam Making Improvements

High steam pressures promise great economies. Pressures of 250 and 350 lb. are used successfully with promise of higher pressures as water tube fireboxes develop.

Low rates of combustion are necessary. Rates on big engines today run to 150 lb. and over. This is wasteful and calls for larger grate areas to reduce this figure one-half.

Higher superheat means greater economy. It reduces the work of the boiler by improving the economy of the cylinders. Superheated steam for auxiliaries greatly reduces the drain on the fire. This economy is equivalent to increasing boiler capacity about four per cent.

Gas velocities are high. It is important to reduce them by increasing gas areas through the flues as much as fixed limits permit.

Air admission to ash pans needs careful attention. A firebox is often filled with gas over six times per second. Restriction must be avoided and spark loss must be reduced. Ash pans need about a cubic foot of capacity per square foot of grate area. Only one engine with adequate grate area now provides it.

Steam separators to remove moisture from the steam on its way to the superheater merit attention for the sake of

economy. As boilers grow larger it is difficult to provide steam space for the enormously increasing volumes of steam used. It is correspondingly important to relieve the superheater of double duty, evaporating water that goes over and also superheating the steam.

The possibilities of pulverized coal as a conservation factor should not be overlooked. The use of lignite and other low grade and low cost fuels is a promising field for further development.

#### Steam Using or Cylinder Improvements

Expansive use of steam in freight service may be provided by design that limits the full gear cut off. This not only saves fuel at low speeds; it results in significant increase of capacity at higher speeds. It does not involve any mechanical complication whatever. It provides additional tractive force at low speeds because it smooths out the torque curve in starting.

"Cut-off" in locomotive operation requires more attention by fuel officers than it has ever received. There is a correct, economical cut-off for every different speed of the engine, one that develops maximum power for minimum steam at every different speed. Until recently this has been left to guess work on the part of the engineman and no two men will adjust the cut-off over a division in the same way. Perfection of power reverse gear mechanism has opened the way to large savings in properly taking advantage of steam expansion as an economy and power increasing factor. But it is necessary to indicate to the engineman the proper adjustment to be made. Cut-off adjustments have also been made automatically, controlled by the back pressure.

Trailing wheels temporarily used as tractors in starting and in helping over hard pulls reduce fuel cost per unit of work done. This principle aids greatly at the low speed end of the drawbar pull-speed curve, and in facilitating acceleration. It permits of greatly increasing ton miles per train hour by increasing operating speed. It reduces the length of time an engine (without limited cut-off) must be "full stroked" in starting and helps every engine in accelerating. It is a capacity increaser and a fuel conserver.

#### Machinery Improvements

Many locomotive parts are unnecessarily heavy. Cast steel cylinders saved two tons in the Lima 2-8-4 type engine. Unnecessary weight restricts the weight of the boiler and robs it of some of its capacity. Weight saved in reciprocating parts reduces dynamic augment and opens the way for greater static weights on drivers.

Between lubrication and fuel there is an important relation. It is estimated that the difference in fuel required to haul a freight train of 60 cars over a division at usual freight train speeds with high grade and lower grade oil is as great as 200 lb. of coal per hour.

With the designers of locomotive power plants ready in all respects, there is no real reason why a freight engine should not be coupled to a train, haul it 1,000 miles or more, uncouple, spend 24 hours in the hands of good men who are fully supplied with facilities, return for 1,000 miles, ready to do it over again and over again. For years the Rhodesian Railway in Africa has operated freight engines 700 continuous miles with sleeping and cooking facilities in special cabooses for the crews. Their trains are slow. It should be easier for us to make long freight runs.

Of very great importance is the switch engine policy of the road. This subject merits a thorough discussion of its own. It is a combined question of machinery and of operation, both sides of it affecting lots of fuel. On a busy, congested road switch engine mileage may be as

great as 25 per cent of total locomotive mileage. This suggests the best of fuel conservation attention applied to switching engines. It is financially foolish to use old road engines for switching service. Railroads perpetuating this practice have no license to urge their men to save fuel.

#### Operating Improvements

Fuel officers are in position to aid greatly in the substitution of train direction by signal indication and in the abolition of the time killing train order, especially the "31" order that stops a train in order to tell it to proceed, also the "19" order that slows the train down for the same purpose. A slow down to a speed of 8 to 10 miles per hour is nearly as costly as a stop. Both of these orders must give place to operation by signal indication.

Fuel officers and division superintendents, signal officers and train dispatchers will profit greatly by the closest co-operation to reduce losses in getting trains over the road. Long locomotive runs, main trackers, the "peg" and "turn around" plans, are playing a big part in fuel records. The load rating of locomotives offers another and too often neglected field for fuel conservation. Distribution of power offers still another. The distribution question is greatly simplified in the case of locomotives capable of hauling with economy a wide range of traffic.

Water purification is distinctly an aid in operation. It is obviously important to provide proper water for power plants of any kind, particularly those intrusted with the handling of money making traffic. One of the railroads leading in long locomotive runs has given unusual attention to this water problem and has found it possible to reduce by 25 per cent the number of locomotives assigned to traffic involving long runs. It is reported that the largest investment involved in its long runs, is in facilities for improving its waters. The annual saving effected amounts to approximately 75 per cent on the total investment in those facilities. In the matter of increased firebox life the service of its fireboxes has been doubled in less than ten years.

#### Knowledge of What We Are Doing

Lack of definite knowledge of the operating possibilities of improved locomotives has done more than any other one thing to retard the progress of the locomotive and the improvement of the locomotive power plant. To be efficient, transportation demands test plant tests for engineering data as the basis of locomotive design and complete road tests for operating data as the basis for financially profitable locomotive operation. The American Railway Association needs a test plant. Every railroad of even fair size needs a dynamometer car more than it needs any other factor in operation. Locomotives have improved not because of exact road operating performance records and facts, but in spite of a lack of them.

#### Co-operation

Real fuel conservation will be accomplished when and where there is real co-operation, when a very high official compels it. An officer, in position to do so, will ask: "Is our locomotive policy right, our car policy, our maintenance, our yards, our locomotive terminals, our side tracks, our signals and our operation?" Every one of these affects every other one and every one affects fuel. They can be best answered affirmatively by co-operative concentration on one thing—Fuel.

#### Discussion

In presenting his paper Mr. Basford referred to the performance of the 2-8-4 type locomotive recently built by the Lima Locomotive Works, Inc., and now in service on the Boston & Albany. This locomotive, he said, had



recently handled a train of over 9,000 tons in 124 four cars over a 134-mile division with comparatively level grades, except for two pusher grades at an average speed of 18 miles an hour. This run was made with an average rate of combustion of less than 60 lb. of coal per square foot of grate per hour and with an average evaporation of over 8 lb. of water per lb. of coal as fired.

A. W. Perley (O.-W. R.R. & N.) in speaking of the improvement in fuel consumption to be obtained from modern locomotives and other economy devices said that he did not question their value but that the financial problems involved were serious and could not be overlooked.

He cited the case of some of the Northwestern railroads where 98½ per cent of all money raised for capital expenditures during recent years had been by the issuance of bonds. Harrington Emerson was inclined to disagree with Mr. Basford's statement that gas velocities are too high. He called attention to the scouring effect of the gases at high speeds which maintains the heating surfaces in a more effective condition for heat transfer than would be the case were the gases to travel at low velocities. He raised the question as to why smaller and thinner tubes could not be developed with the prospect of more efficient heat transfer.

## How Can a Mechanical Officer Effect Fuel Economy?

By John Purcell

Assistant to Vice-President, Atchison, Topeka & Santa Fe

The cost of fuel has more than doubled in the past ten years and has reached a point where it is the greatest item of expense next to wages. The chief mechanical officer is responsible for maintaining the locomotives in an efficient condition at a minimum cost, and with the increased cost of fuel, certain features that have to do with locomotive maintenance effecting fuel economy will require particular attention.

For many years the mechanical officer has maintained his power by doing the work reported by the enginemen and inspectors. Such appurtenances as cylinder packing, valve rings, superheater unit, steam pipe and nozzle stand joints, grates, smoke box air leaks and stopped up flues were not given attention unless the locomotive was reported as not performing properly. The waste of fuel that takes place between the time a locomotive is in first-class condition and the time it is reported not steaming is of considerable consequence. This has resulted in many roads resorting to a monthly inspection of these features in order to reduce the fuel consumption. This inspection and the necessary repairs are usually handled at the time of monthly boiler inspection and, in addition to the fuel saving, this inspection results in decreasing the number of engine failures and in the locomotives giving better service on the road.

### Two Problems of the Mechanical Officer

The average life of a locomotive has been approximately 30 years of service, and on some territories the modern locomotive consumes \$30,000 worth of fuel per year, or \$900,000 worth of fuel in the life of the locomotive. From the trend of fuel costs in previous years, it can be expected that the cost will continue to increase. The chief mechanical officer is confronted with two important problems dealing with fuel conservation, one being to make existing locomotives more efficient, the other to design locomotives which will render efficient service on the territories where the locomotives are to operate.

There is a field for reducing the fuel consumption of existing locomotives by the application of superheaters, feed water heaters, brick arches, increasing steam pressure, improved front end arrangements, elimination of smoke box air leaks, closer fitting grates, and by application of larger tenders which will reduce the number of stops on the road and eliminate taking water at some of the bad water points on the division. These features may be taken care of with a relatively low capital investment and should be given thorough consideration. The useful life of existing locomotives may be prolonged by these additions and betterments, making them useful and efficient units of increased capacity. The service that exist-

ing locomotives are to perform in future years should be studied, and where the capital is available, locomotives should be equipped with fuel saving devices of proved merit which will give a net saving for the application. Complications on account of weight distribution on some of the existing locomotives will be found a limiting factor.

The application of devices on new locomotives is less complicated. The locomotives being built each year secure a greater efficiency in the use of fuel. The thermal efficiency of locomotives built in 1900 was approximately five per cent, while locomotives are being built today that have a thermal efficiency of eight per cent. These per cents were secured from test plant results and show an increase in efficiency of 60 per cent in 25 years. Definite progress is being made to reduce the fuel consumption of the locomotive, and developments may be expected in the future that will further improve its efficiency. Experimental work is being done to reduce fuel consumption by use of water tube type of fireboxes, steam pressure as high as 350 lb., three-cylinder construction, 50 per cent cut-off, and the Diesel locomotive.

### The Need for Reliable Tests

Any fuel saving or capacity increasing device will make the locomotives more complicated and increase the cost of maintenance, which must be offset by an increase in the economic value of the locomotive. The chief mechanical officer is confronted by claims of low maintenance and high fuel saving for different devices that are startling. Many railroads do not have equipment accurately to test out these devices, with the result that reports of tests are being furnished which are not representative of the net saving that can be realized from the different applications. The American Railway Association is investigating the advisability of having a centralized testing plant for securing accurate and unbiased results for the member roads. Such a plan will be of great assistance to roads not provided with test equipment and organization for handling test work, and will have a far reaching effect in reducing fuel consumption.

Proper maintenance and operation are necessary to secure the greatest net saving on investment from fuel saving or labor saving devices on locomotives. The purpose of these devices is to reduce fuel consumption and without proper maintenance and operation this purpose can be entirely defeated and may result in a fuel loss.

The assignment of power suitable for the service to be performed is an important factor in fuel economy, and is equally important in cost of maintaining locomotives. The grades, average speed, character of business both

present and future, quantity of fuel and the available boiler feed water must be considered. A thorough study of these conditions and careful methods of arriving at tonnage ratings of new as well as old locomotives is necessary to assign power intelligently to produce a minimum fuel consumption per unit of work.

A uniform quality of fuel should be furnished over the entire territory to which the locomotive is assigned. Tests should be made to determine the relative consumption per unit of work for each different fuel that is available. The best fuel from the standpoint of consumption and cost should be used. A good quality and grade of fuel is desirable but is not as essential as having a uniform quality of fuel. Good results are being secured from inferior qualities of fuel where it is uniform and the locomotives drafted for that particular fuel.

#### Better Locomotive Utilization Saves Fuel

The utilization of locomotives has been materially increased in the last ten years by the general pooling of power, and in more recent years by extending locomotive runs. It is questionable whether the pooling of power resulted in any fuel saving, but the extended locomotive run over several operating districts, or the quick turn-around on single operating districts without knocking the fire has resulted in fuel saving as well as decrease in maintenance cost. The limiting factors on how far the locomotive can run before requiring roundhouse attention are the design of locomotive, quality of fuel, quality of boiler feed water, character of business and facilities for maintaining the locomotives. It has been found economical and practical to run passenger locomotives from ten to twelve hundred miles without roundhouse attention by having turn-around attention at the end of half

of this mileage. Locomotives in through freight service are being operated for distances from three to five hundred miles without roundhouse attention, with an equal measure of economy. This operation eliminates the fuel consumed at intermediate terminals and greatly reduces boiler maintenance costs on account of relieving the boiler of the severe strain caused by expansion and contraction in cooling down and firing up.

While the chief mechanical officer can assist materially in the conservation of fuel by keeping his locomotives in first class condition, the enginemen and firemen can also assist very materially in reducing fuel consumption. I had an opportunity sometime ago to review the performance of 18 passenger locomotives of the same type and size, running in pool service and handling the different trains on a 200-mile division. The report shows the performance of each individual engineman and fireman, as well as each locomotive. The amount of fuel consumed varied, on the same locomotive and same train making the same number of stops, under the same weather conditions, as much as 15 per cent. The best performance was accomplished by the proper operation of the throttle and reverse lever; also lubrication, good firing practices, avoiding waste of steam through pops, and the height the water was carried in the boiler.

It is possible for the best maintained locomotive and the best trained engine crew to show a poor fuel performance if the train is not moved at an economical speed, or if the train furnished by the transportation department does not utilize the capacity of the locomotive. These transportation features are as important in fuel conservation as the design, maintenance, assignment or efficient operation of locomotives, which are the direct duties of the mechanical officer.

## Report on Grates with Restricted Air Openings

The Committee on Front Ends, Grates and Ash Pans agreed to limit its report to the results of experiments on the use of restricted air openings in grates, which it had learned were in progress on two western railroads. At this time it is to give only a general statement of the purposes of these tests and some general observations on the results thus far obtained.

On one of the roads referred to, the use of grates with restricted air openings was apparently undertaken primarily because of loss of coal through the grates. This with friable coal which does not soften and coalesce on the grates may assume serious proportions. On the other road the restricted air openings were first used in locomotives burning lignite, and the practice was resorted to chiefly because of the difficulty of maintaining the fire bed in good condition with grates of the ordinary design. It appears therefore, that in both cases restricted air openings in grates have been used largely because the coal to be burned was in some respects unusual, and the committee is of the opinion that such a practice will be justified only under special conditions and that it is not likely to become widespread.

The committee believes that for the majority of railroads and for most of the coals in use the aggregate air opening in grates should continue to be made as great as the circumstances permit. With this understanding we are glad to submit the following statements concerning the practice of restricting the grate openings.

With reference to its experiments the first of the two roads referred to makes the following statement: "We have done a great deal of experimenting with different designs of table grates compared with the standard finger

grates such as are ordinarily used in locomotives. We went into this experimental work on account of the waste, due to fuel falling through the finger grate in an unburned or partially burned condition."

The remainder of the statement from this road quoted by the committee may be summarized as follows: Smoke-box gas analyses made with the different table grates indicated that there was still four or five per cent of free oxygen in the flue gases so that it seemed feasible to continue to decrease the size of grate openings until the effective air opening had been reduced to about 16 per cent of the total grate area, with  $\frac{3}{4}$ -in. circular air openings, tapering to  $1\frac{1}{16}$  in. at the bottom of the grate bar. This grate has been found to increase materially the carbon dioxide and to reduce the free oxygen. This road states that tests indicate a saving of about six per cent as compared with finger grates.

The other road referred to is the Northern Pacific. The report quotes a letter from M. A. Daly, general fuel supervisor, with respect to experience in burning Rosebud (lignite) coal mined in Montana. This coal as fired has the following analysis:

Moisture .....	25.66 per cent
Volatile .....	28.39 per cent
Fixed carbon .....	38.59 per cent
Ash .....	7.36 per cent
Heating value .....	8,743 B.t.u.

This coal breaks up in burning and is very difficult to keep on the grate, the strong draft lifting it and uncovering thin spots in the fire, when using grates with  $\frac{3}{4}$ -in. slotted openings. The grate now used has circular openings  $\frac{1}{2}$  in. in diameter at the top and  $\frac{7}{8}$  in. in diameter at the bottom and gives air openings from 12 to



13½ per cent of the area of the bar, and a few per cent greater air opening when measured in relation to the total grate area. It has been found that these grates also burn such coals as Pittsburgh No. 8 from Ohio and other bituminous coals satisfactorily, as well as the lignite for which they were particularly designed, and slightly increased efficiency is expected from this grate burning these coals when accurate tests are made.

The committee states that Mr. Daly is of the opinion that the success of these grates is not to be ascribed to the

reduction in the aggregate air opening, but primarily to the size of the holes through the grate which reduce the force of the jets of air drawn through the grates so that they do not disturb the particles of coal on the grate.

The report is signed by Edward C. Schmidt (University of Illinois), Chairman, M. C. M. Hatch (M. K. T.), V. L. Jones (N. Y., N. H. & H.), G. H. Likert (U. P.), John P. Neff (American Arch Company), C. B. Smith (B. & M.), F. C. Thayer (Southern), G. A. Young (Purdue University) and F. Zeleny (C. B. & Q.).

## Report on Boiler Feed Water Heaters

The committee is able to report a very substantial gain in the number of feed water heaters applied and on order as of May 1, compared with previous years as follows:

Year	Feed water heaters	Exhaust steam injectors
1920 .....	7	..
1921 .....	54	..
1922 .....	234	..
1923 .....	1,429	..
1924 .....	2,123	24
1925 .....	2,551	37

This remarkable gain in the past few years is conclusive of the practicability of the feed water heater.

### Closed Type Feed Water Heater

Since the last report of this committee, important developments for the closed type feed water heater equipment have been three in number as follows:

1—Development of a duplex feed pump of smaller size, but larger capacity and smoother action compared to the original simplex type.

2—Perfection of means for preventing accumulation of scale in the heater.

3—Protection of the heater equipment against any possible corrosion, electrolysis or action of acid used in washing.

The new type of boiler feed pump developed by the Superheater Company with the Elesco closed type feed water heater is known as the constant flow type. This is of the duplex arrangement wherein steam distribution is so arranged that the movement of the two pistons is the same as if they were connected to cranks set at 90 deg. angles so that with one piston at the end of the stroke, the other is at that instant at mid-stroke, thereby insuring that when one piston is reversing the other is delivering a steady stream of water. Thus a steady regular flow of water is produced, which insures keeping the boiler check off its seat while the pump is in operation.

This pump is capable of discharging 10,000 gallons of water an hour against a pressure of 225 lb. There are now over 300 pumps of this design in service and it has been adopted as standard equipment for the larger sizes of Elesco feed water heaters.

Brief mention was made in the discussion of last year's report to the effect that methods were being developed which would prevent accumulation of scale in the tubes of the closed type feed water heater in bad water districts. It was explained at the time that this process consisted in the addition of a very small amount of a compound to the water in the tender, which acted as a protective colloid and would prevent the precipitation of scale out of the feed water until after it had passed through the heater. The compound used for this purpose is chestnut bark extract, a product commonly used by tanners. This is fed into the water in the tender in proportion of one part extract to about 100,000 parts of water. Tests have

shown that some antifoaming compound regularly fed produces the same results.

Experiments have been carried on during the past year in the district where the largest amount of scale accumulated in the tubes of the feed water heaters. It has been found that it is possible to run heaters continuously in that district without cleaning, and without accumulation of any scale or other deposits in the heater tubes. Inasmuch as the most satisfactory results are obtained when the compound is added to the water in the proper proportions, a mechanism has been developed which will automatically measure and feed the compound whenever water is taken. It will normally cost about ¼ cent per 1,000 gallons for treating the water in this way, after the apparatus is applied. It is only recommended that the anti-scale treatment be used in cases where the heater requires washing each 30 days or less.

In certain districts some trouble has been encountered from corrosion from acid washing and electrolysis of feed water heaters, due to some unusual condition in the feed water. In order to prevent all troubles of this nature arrangements are now made to cover all steel or iron parts of the Elesco feed water heater that are touched by water, with a non-corrosive coating. It is the intention of the manufacturers to protect all feed water heaters in this way.

### Open Type Feed Water Heaters

There have been purchased to date, by the railroads of the North American continent, slightly more than 1,400 open type feed water heaters. Operation of these units has gradually improved through the growing familiarity of the users with the construction and functioning of the apparatus, with the development of organized maintenance and with gradual improvement in materials and construction. The latter have included steps looking to the perfection of the steam valve gear and the water valve service and the selection of suitable materials for gaskets and pump piston and piston rod packings.

The Pennsylvania Railroad has released information concerning tests made on the locomotive testing plant of open type feed water heaters applied to their Decapods or 2-10-0 type locomotives in which they show that within the capacity of the feed water heater they credit a saving of 14 per cent as an average throughout its complete range. This is somewhat higher than has been previously reported by your committee, but this range could well be made with a coal burning locomotive where the coal rate per square foot of grate area is high and consequently reduces the boiler efficiency.

Cleaning of the open type heater, where necessary at all, and in all but the most exceptional cases, can be deferred to the general shopping date. Methods of cleaning, thus far resorted to, consist of scraping, washing, and the judicious use of the scale solvents on removable parts. Fully half of the installations thus far made are

characterized by the omission of the oil separator from the exhaust steam line to the heater, this having been done at the option of the users, thus far, with no results that prompt them to question the correctness of this line of procedure.

Scale formation in the heater is confined mostly to the upper section of the heater, where, between shoppings, scale will form to a thickness of between one and two inches. In the lower sections of the heater, the formation of scale is not noticeable. These scale formations in the heater, however, do not affect the working or the temperature of the water delivered. Another troublesome scale formation is found in the atmosphere vent pipe from the heater, which has, at times, been entirely closed by scale, and when in this condition it reduces the temperature of the feed water as much as 15 or 20 deg. on account of the inability to get rid of the air in the heater.

#### Exhaust Steam Injectors

In the 1923 and 1924 reports of this committee, brief mention was made of the exhaust steam injector, and attention was drawn to some of its more prominent characteristics. The development of this apparatus to meet American conditions has progressed steadily during the last three years. The principal attention has been given to the perfection of an automatic control arrangement, making unnecessary the manipulation of a number of levers and valves for the proper operation of the instrument. Many of the older types have now been changed and all new ones furnished are equipped with the new control.

As now arranged the operation of this injector is simple and requires little attention on the part of the engineman. To obtain the most economical results it should be operated by adjusting the water regulator so as to meet the demands with the use of as little supplementary steam as possible. The amount of this supplementary live steam when the locomotive is in operation depends largely on the exhaust steam pressure and the temperature of the feed water. The injector has been known to work perfectly against 200 lb. boiler pressure with the supplementary steam shut off entirely when the back pressure was about 4 lb. and the feed water temperature was 45 deg. F. Injectors will handle feed water successfully up to 85 deg. F. temperature.

It is very important that the size of the injector be suited to the size and power of the locomotive.

Some figures are now available in connection with the cost of maintenance of the exhaust injectors. One road reports that the cost of maintenance for twelve months, from April 1, 1924, to April 1, 1925, on eleven injectors amounted to a total of \$490. Of this amount \$265 was for material and \$225 for labor. This amounts to about \$45 per injector per year, or \$1.20 per 1,000 miles. These eleven engines made a total of 407,245 miles during this period.

The following quotations were selected as typical from various reports received by the committee:

"This device has given us about 5½ per cent reduction in water consumption with a proportionate saving in fuel since its installation in July, 1923. It is my opinion that when the mechanical imperfections we have found in the injector have been eliminated, it will show a saving of between 10 and 11 per cent in fuel."—Report dated April 5, 1925.

"Our experiences with this injector have been so satisfactory that we anticipate a considerable extension in the use of this device. Results of road tests made with very meagre test apparatus showed the exhaust steam injector to save about 7 per cent when compared with a non-lifting live steam injector."—Report dated April 10, 1925.

Inasmuch as such test data now available does not point to any definite conclusions the committee hesitates to give a general statement as to the savings which may be expected of the exhaust steam injector. The lack of determinate data can in part be attributed to the number of variable factors involved such as the use of both exhaust and live steam and to variations in efficiency which may occur at the various rates at which the exhaust injector is operated. It is established, however, that there will be a noticeable drop in back pressure and that the superheat will be lowered about 15 deg.

#### Feed Water Purifier

The Canadian National was experimenting with one locomotive equipped with a feed water purifier placed on top of the boiler so that the discharge from the feed water heater and injectors passed through it to the boiler but so much trouble was experienced that it was removed and within the knowledge of the committee there are at this time none in service in this country. This device is particularly applicable to waters which contain a great amount of carbonates and feel that this is a subject that should not be dropped by the American railways.

#### Feed Water Heating at Terminals

Last year the committee referred to the fact, that approximately 20 per cent of all locomotive fuel is consumed at terminals, and presented some figures to show the effect on fuel consumption of supplying hot filling water for locomotives, where the filling water is heated by blown off water and steam that would otherwise be wasted. It was estimated that the possible fuel saving from this source amounted to from 1,500 to 2,000 pounds of coal for each locomotive filled.

One of the factors in connection with the savings from boiler feed water heating at terminals is found in the reduction of steam blower consumption, resulting from the reduction in time required for firing up locomotives filled with hot water over the time required to fire up a locomotive filled with cold water. The test which will be described in more detail in subsequent paragraphs indicated that this saving in time amounted to about five minutes in the time required to steam up a locomotive for each 10 deg. increase in the temperature at which the boiler was filled. On this basis, it will require about one hour less to steam up a locomotive filled with water at 180 deg. F. than the time required to steam up a locomotive filled with water at 60 deg. F.

As the saving in blower steam consumption resulting from a reduction in the time required to steam up a locomotive depends upon the rate of steam consumption of the blower itself, the committee further undertook to investigate the situation with respect to the quantity of steam required for blower purposes. It is apparent from the replies received, that this phase of locomotive terminal operation has received very little consideration, and that the quantity of live steam ordinarily required for firing up locomotives represents a greater fuel loss than is generally appreciated. While no general conclusion as to steam consumption required for blower purposes can be drawn from the above, it is evident that the blower is a fuel consumer of sufficient magnitude to warrant careful attention.

In this connection some very interesting information was submitted by the Baltimore & Ohio on the use of a motor driven induced draft fan for steaming up locomotives. The following table shows the results of some tests comparing steam blower operation and an electrically operated fan.

These figures show up the cost of operating a steam jet in a very forceful manner. For practically the same con-



ditions throughout, the fan was able to fire up a locomotive for a cost of about 3.7 per cent of the cost when using the steam blower.

The latest important development in connection with boiler feed water heating at locomotive terminals is the direct injection into the locomotive boiler of live steam together with hot filling water for the purpose of reducing

#### Data Relating to Electric Blowers for Firing Up Locomotives in Roundhouses

Abstract from tests conducted September 26, 1923, on a Mikado locomotive.

Items	Fan	Steam blower	Difference
Kind of coal used.....	R.m. gas	R.m. gas	....
Kind of kindling used.....	Fuel oil	Fuel oil	....
Average temperature of water at start, deg. F.....	72	76	4
Pounds of coal on grates at start.....	1,212	1,206	6
Pounds of coal fired during test.....	690	681	9
Total coal used, pounds.....	1,902	1,887	15
Draft in smoke box, average, in.....	0.84	0.81	0.03
Kw. hours used.....	4.03	....	....
Pressure on steam blower line, lb. per sq. in. ....	....	85.5	....
Pounds steam used per hour.....	....	2,452	....
Pounds of steam needed to draft locomotive.....	....	2,800	....
Area of blower nozzle tip, sq. in.....	....	0.87	....
Time to get 1 lb. per sq. in. steam pressure after light-off, min.....	43.0	47.0	4.0
Time to get 65 lb. per sq. in. steam pressure after light-off, min.....	66.5	68.0	1.5
Cost to draft locomotive.....	\$0.062	\$1.682	\$1.62
Cost per 1,000 pounds of steam.....	....	0.60	....
Cost of power per kw.-hr.....	.0154	....	....

the time and fuel required to steam up locomotives. This method may also be utilized for steaming up locomotives to a working pressure without lighting the fire, for the purpose of eliminating smoke and blower steam in the engine house. In addition to the economy to be gained from filling with hot water, the direct injection of live steam generated in an efficient stationary boiler requires less fuel than the same amount of steam generated in the locomotive firebox during the firing up period. The reduction in blower steam required with this method represents a further fuel saving.

The equipment required for direct steaming is the same as for blowing off locomotives and for washing and filling locomotives with water heated by the blown-off steam and water, with the addition of a live steam main from the power plant with connections to each filling drop. With these connections the usual procedure would be to attach the blow-off valve to the combined blow-off and filling connection as soon as the locomotive is placed in the engine house. If the boiler is to be washed or water changed, the contents are blown off through this flexible connection. When ready to fill, both the filling and live

steam valves are opened. The hot filling water and live steam combine in a booster connection and enter the locomotive boiler at a temperature considerably over 212 deg. As soon as water shows in the glass, the hot water valve is closed and the flow of live steam continued until a working steam pressure is built up in the boiler.

This practice was referred to in the previous report in connection with the subject of feed water heating at terminals and several installations of the direct steaming system are now being made at new terminals so that a study of this method in regular operation will be available for the next report. For the current report, the most comprehensive data on this subject is found in the results of a series of tests on steaming up locomotives that was conducted by the Atchison, Topeka & Santa Fe during the past year at Newton, Kansas.

The following general conclusions may be drawn from these tests:

1.—The consideration of steaming up without fire implies the use of high pressure steam in power plants and consequent changes in order to obtain the desired speed in building up the steam pressure in the boiler, requiring the use of steam pressures of about 200 lb. and stationary plants built accordingly; also a system for filling at 180 deg. F. and above.

2.—A saving of fuel would amount to slightly over one gallon of oil, or its equivalent in coal, for each thousand gallons of boiler feed water used in firing up when heated 10 deg. F. by the utilization of waste heat.

3.—There would be an average saving of time of about 4 to 5 min. for each 10 deg. F. difference of feed water temperature.

4.—A saving of time would result from the combined filling, steaming and firing up processes, of 35 min. as compared with simple firing up with 180 deg. F. initial temperature. There should be a reduction of stand-by losses together with some reduction of smoke nuisance in roundhouses. The latter would, of course, be especially noticeable in case of coal burning locomotives.

The report is signed by E. E. Chapman (A. T. & S. F.), chairman; E. A. Averill (Superheater Company), Stanley H. Bray (S. P.), A. G. Hoppe (C. M. & St. P.), V. L. Jones (N. Y., N. H. & H.), John M. Lammedee (Worthington Pump & Machinery Corporation), L. P. Michael (C. & N. W.), Geo. S. Mikles (N. Y., O. & W.), Geo. E. Murray (N. Y. C. & St. L.), L. G. Plant (National Boiler Washing Company), John M. Snodgrass (University of Illinois), and H. W. Sefton (C. C. & St. L.).

## Report of Committee on Fuel Stations

While the need for modern mechanical coaling facilities is recognized at all points where large quantities of coal are delivered to locomotives, the field for mechanical equipment at small coaling stations is not so well defined.

The operating requirements at small terminals and intermediate coaling stations are not usually so urgent as to require mechanical facilities for coaling locomotives and railroads are generally reluctant to spend money for improving the facilities for handling locomotives at small terminals. This is partly because it is generally expected that the small terminal will grow or may later be relocated but it is principally due to the belief that all funds available for improving the property are more urgently required at the larger terminals.

Very little has actually been accomplished toward providing the minor coaling stations with mechanical facilities. This report, therefore, will be confined to a review

of the situation at points where less than 100 tons of coal are delivered daily and a consideration of available mechanical coaling facilities adapted to meet the requirements both from an operating and investment standpoint.

A letter of inquiry was addressed to the chief engineers of a number of railroads from which replies were received from 22 Class I railroads operating 77,370 miles of line. It is estimated that there are approximately 1,000 points on all Class I railroads at which from 25 to 100 tons of coal are delivered daily. It was further concluded from these replies that there are 400 points on all the Class I railroads at which from 25 to 100 tons of coal are delivered daily without mechanical facilities.

#### Mechanical Cinder Facilities at Small Terminals

A number of the mechanical coaling facilities adapted to small terminals also provide for handling cinders with-

out the manual labor usually involved in shoveling into cars. Where the handling of these cinders can be accomplished by the same mechanical facilities installed for delivering coal to the locomotive it not only lowers the unit costs of operation but will justify a larger investment in mechanical equipment designed to handle both coal and cinders.

Both cinders and coal are handled at 194 stations disbursing from 25 to 100 tons of coal daily on the railroads who replied to the inquiry. Only 53 of these points, however, are provided with mechanical equipment for handling both coal and cinders. It may be estimated that there are approximately 500 small coaling stations at which cinders are handled and that only 135 of these points have mechanical facilities for handling both cinders and coal.

#### Saving from Installing Mechanical Coaling Facilities

The savings that would result from the installation of mechanical coaling facilities at stations delivering from 25 to 100 tons daily are indicated by the following tabulation of typical costs under average conditions as based upon the most representative data available to the committee at this time:

	Average tons per day	Operating and maintenance cost per ton
Mechanical coaling plants.....	63	10.8 cents
Locomotive crane .....	74	14.5 cents
Gravity trestle.....	81	14.7 cents

From figures submitted to the committee it is estimated that it costs at least 25 cents per ton to coal locomotives by manual labor. For the purpose of this estimate, the cost of handling cinders where not over 10 tons are loaded daily may be taken at 50 cents per ton.

#### Could Save a Million Dollars

##### Annually on All Class I Roads

If mechanical facilities were installed at 400 stations on Class I railroads issuing from 25 to 100 tons of coal daily without mechanical facilities the saving would depend upon the maintenance and depreciation charges on this equipment as well as the operating cost per ton above shown. For the purpose of this estimate, the following figures for the equipment shown in Exhibit 4 are submitted as typical of a small mechanical coaling station provided with an overhead delivery bin of 50 tons capacity, assuming favorable operating conditions:

Cost of 50-ton coaling station installed.....	\$7,000.00
Incidental cost of track improvements, etc.....	700.00
Annual interest charge on investment at 6 per cent.....	462.00
Annual depreciation reserve payments to replace investment in 20 years, compounded semi-annually at 6 per cent.....	204.24
Annual maintenance cost, average for 20 years.....	45.00
Interest, depreciation and maintenance charge per ton, where 50 tons are delivered daily to locomotives.....	3.9
Operating costs per ton:	
Labor (3 hours per day at 50 cents per hour to elevate 50 tons) .....	3.0
Power and supplies (10 h.p. motor 3 hours at 6 cents per kw.-h. to elevate 50 tons of coal).....	3.0
Total cost per ton.....	9.7

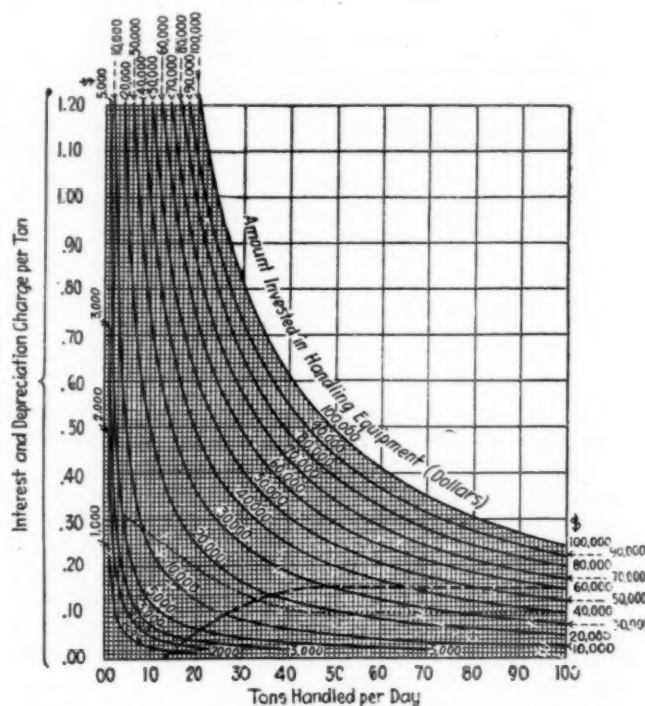
Where both cinders and coal are now handled manually the savings that would result from installation of mechanical facilities adapted to loading cinders and coaling locomotives as illustrated in Exhibit 7 may be estimated from the following figures that are representative under favorable operating conditions of a small mechanical coaling and cinder loading station provided with an overhead delivery bin of 60 tons capacity and space for storing cinders as shown:

Cost of hoisting station installed.....	\$15,000.00
Incidental cost of track improvements.....	1,000.00
Annual interest charge on investment at 6 per cent.....	960.00
Annual depreciation reserve payments to replace investment in 20 years, compounded semi-annually at 6 per cent.....	424.00
Annual maintenance cost, average for 20 years.....	100.00
Interest, depreciation and maintenance charge per ton of coal and cinders, where 50 tons of coal and 10 tons of cinders are handled daily .....	6.2

#### Operating costs per ton of coal and cinders:

Labor (2 hours per day at 75 cents per hour to elevate 50 tons of coal and load 10 tons of cinders).....	3.0
Power and supplies (40-h.p. motor one hour and one-half total running time at 4 cents per kw.-h.....)	3.0
Total cost per ton.....	14.2

If the assumption that cinders are handled at approximately one-half of the estimated 400 coaling stations delivering from 25 to 100 tons of coal per day without mechanical facilities is substantially correct and it is further assumed that the average quantity of coal delivered daily at these stations is 50 tons, the aggregate



Dash line is difference between 25¢ per ton and actual cost of handling with mechanical equipment and shows allowable inv. in mechanical equipment.

Dotted line is actual cost of handling with mechanical equipment on O.S.L.R.R.

#### Oregon Short Line Chart, Showing Charge Per Ton of Coal Handled Per Day to Pay Nine Per Cent on Investment in Handling Equipment

savings that would result from the installation of mechanical facilities can be predicted as follows:

##### TWO HUNDRED STATIONS DELIVERING AN AVERAGE OF 50-TONS OF COAL DAILY

Present cost per ton of coal, without mechanical facilities.....	25.0
Average cost per ton with mechanical coaling stations.....	9.7
Total tons of coal delivered per year at these stations.....	3,650,000
Estimated annual saving at 200 small coaling stations by installation of mechanical equipment.....	\$558,450
Average net annual saving per station.....	\$2,938

##### TWO HUNDRED STATIONS HANDLING AN AVERAGE OF 50-TONS OF COAL AND 10 TONS OF CINDERS DAILY

Present cost per ton of coal, without mechanical facilities.....	25.0
Present cost per ton of cinders, without mechanical facilities.....	50.0
Average cost per ton of coal and cinders with mechanical equipment.....	14.2
Total tons of coal delivered per year at these stations.....	3,650,000
Total tons of cinders loaded per year at these stations.....	730,000
Estimated annual saving in coaling locomotives.....	\$394,200
Estimated annual saving in loading cinders.....	\$251,340
Aggregated annual saving estimated at 200 small stations by installation of mechanical coal and cinder handling equipment.....	\$655,540
Average net annual saving per station.....	\$3,278

It is claimed, therefore, that the total possible saving from the installation of mechanical coaling and cinder loading equipment at all stations on Class I railroads that now issue from 25 to 100 tons of coal and load from 5 to 25 tons of cinders daily without mechanical facilities would amount to well over one million dollars per year. The larger part of the saving would be effected at sta-



tions where mechanical equipment could be utilized both for coaling engines and loading cinders, although the initial cost of this equipment is higher than for apparatus designed only for coaling purposes.

### Investments Justified in Mechanical

#### Facilities at Small Terminals

To confirm these estimates and show that the investments justified in mechanical coaling and cinder loading facilities at small terminals is well in excess of the actual cost of equipment available for this purpose, opinion was solicited as to the maximum investment in mechanical coaling facilities at stations disbursing from 25 to 100 tons of coal daily and the cost per ton to which the operation of these mechanical facilities would have to be limited to justify the investment.

Railroad	Investment justified in mechanical coaling facilities in relation to Average tons of coal disbursed	Maximum cost per ton at which mechanical coaling facilities can be operated to justify their installation
A.....	\$55,000 to \$70,000 at stations delivering up to 100 tons per day.....	12 cents per ton
B.....	\$44,000 for avg. 80 tons daily.....	13 cents per ton
C.....	\$40,000 for avg. 100 tons daily.....	8 3/4 cents per ton
	\$28,000 for avg. 75 tons daily.....	9 1/2 cents per ton
	\$19,000 for avg. 50 tons daily.....	8 1/2 cents per ton
	\$ 7,000 for avg. 25 tons daily.....	10 3/4 cents per ton
D.....	\$20,000 to \$40,000 at stations delivering from 35 to 100 tons per day.....	10 cents per ton
E.....	\$16,000 to \$36,000 at stations delivering from 25 to 100 tons per day..	8 to 13 cents per ton
F.....	\$12,000 to \$20,000 at stations delivering from 25 to 100 tons per day..	6 to 15 cents per ton
G.....	\$6,000 to \$25,000 at stations delivering from 25 to 100 tons per day..	13 cents
H.....	\$10,000 at stations delivering from 25 to 100 tons per day.....	10 cents
I.....	\$6,000 to \$10,000 at stations delivering from 30 to 50 tons per day.....	6 cents
J.....	\$23,500 for avg. 30 tons daily.....	11 cents per ton
	\$23,760 for avg. 40 tons daily.....	12 cents per ton
	\$23,960 for avg. 43 tons daily.....	12 cents per ton
	\$52,000 for avg. 72 tons daily.....	11 cents per ton

The committee is indebted to B. H. Prater, assistant chief engineer of the Oregon Short Line Railroad, for the most analytical, individual survey of small coaling station facilities in relation to the cost of operation and allowable investment. The results of this study show the average tons of coal loaded per day during 1924 and cost per ton to handle at stations on the O. S. L. Railroad. Fig. 1, shows the charge per ton of coal handled to pay 9 per cent on investment in handling equipment (5 per cent for interest and 4 per cent for depreciation and repairs). This chart is based upon records indicating that coal may be handled by hand direct from car to locomotive for 25 cents per ton, with little or no investment in equipment and that the cost of operating mechanical plants averages 10 cents per ton where 40 tons or more are handled daily, and for less than 40 tons, the cost increases until at one point handling an average of 4.9 tons per day the cost averaged 31 cents per ton. This handling cost for mechanical equipment is indicated by the dotted line in Fig. 1.

#### Computing Savings

To determine the allowable investment for various tonnages handled the differences between 25 cents per ton (cost of direct manual handling) and the cost of mechanical handling is the amount which may be applied to pay 9 per cent on investment. This difference has been plotted on the chart shown in Fig. 1. From this line the allowable investment for any tonnage from 1 to 100 tons can be determined, the limiting operating costs being shown by the dotted line. It is stated that this analysis of coal handling costs and conclusions as to justifiable investment is based entirely on comparison of handling costs, no consideration having been given to such problems as necessity of coaling locomotives quickly without delay to train. It is obvious that there are points where the actual handling cost is a minor consideration.

The following pertinent remarks regarding investments in mechanical coaling facilities are offered by the Chief Engineer of road "F" in connection with the data submitted by that road. "As a general proposition, a study should be made and consideration given to the installation of mechanical facilities when the cost of handling coal exceeds 18 to 20 cents per ton. In determining the economics of the installation, delays to trains and cost of turning engines at terminals should be considered."

### Mechanical Coaling Facilities

#### for Small Coaling Stations

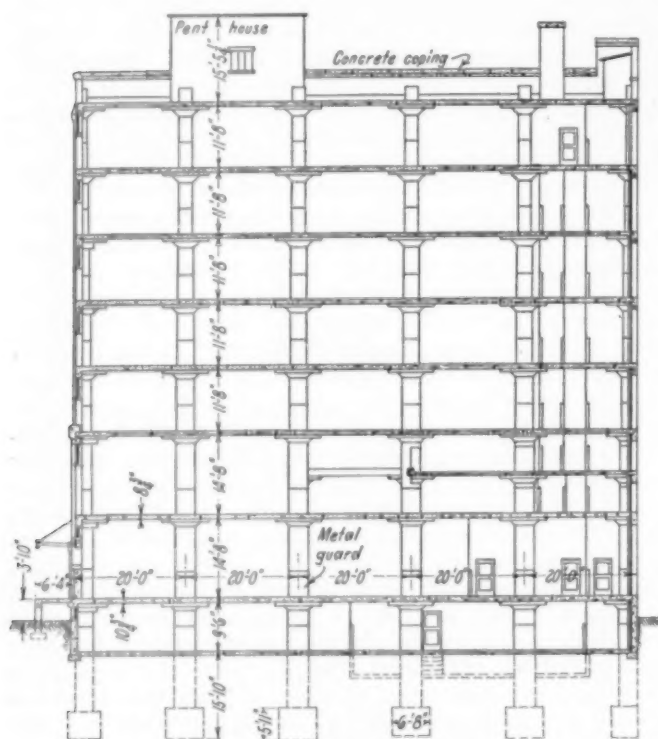
The committee's report was concluded with eight exhibits illustrating mechanical facilities suitable for the requirements given in the preceeding part of the report. Exhibit I illustrates a fuel station of the inclined trestle type on which cars are placed in a position to discharge by gravity into delivery pockets. The objections to this type of facility are that the wooden trestle and coal pockets involve a fire hazard and that considerable ground space is required for its construction. One of the simplest strictly mechanical installations for coaling locomotives without overhead delivery bin capacity is illustrated in Exhibit II. It consists of a skip hoist, electrically driven, with a concrete unloading trough in which the coal is discharged from hopper cars. Exhibit III shows a small coaling station without overhead delivery bins which elevates the coal by means of an electrically driven conveyor. This station delivers daily about 50 tons of coal to locomotives. It requires about 20 minutes to place 10 tons of coal on a locomotive tender. Exhibit IV illustrates a fuel station which can be almost completely shop fabricated and shipped on flat cars to the point of erection, where it can be placed on prepared foundations by a locomotive crane. It consists of a shell, comprising the bin and hoist housing; the diameter of which is 11 ft. This is made in two sections with a bolted ring joint, the lower section having an inclined bottom for the storage bin and an outlet equipped with a gate and hinged chute. A 150-ton capacity coaling station constructed of steel or concrete is shown in Exhibit V. It is provided with a one-ton skip hoist having a capacity for elevating 40 tons of coal an hour. Exhibit VI shows a layout for coaling and sanding locomotives and loading cinders. It has been shown that the economies resulting from the installation of a complete locomotive terminal unit of this type will justify a considerably greater investment than for mechanical equipment alone. Where the coaling and cinder loading functions are provided for in a single mechanism, the facility may properly be designated as a locomotive hostling station. Exhibit VII shows two different designs of this type. An electrically operated crane and clam-shell bucket is utilized for unloading coal cars, elevating the coal to an overhead delivery bin, or coaling locomotives direct, and unloading cinders. Exhibit VIII describes a coaling station built on the cylindrical principle but has in addition a cylindrical bin for cinder storage placed in position to discharge by gravity into cinder cars, and a cylindrical sand drying storage bin and delivery equipment. Only one of these bins is provided with a hoisting mechanism. This hoist serves the adjacent bins by means of a deflecting chute and is arranged to elevate either coal or cinders.

The report is signed by L. J. Joffray (Illinois Central), chairman; E. E. Barrett (Roberts & Schafer Co.), W. T. Krausch (C. M. & St. P.), W. A. McGee (New York Central), L. G. Plant (National Boiler Washing Co.), O. T. Snow (T. W. Snow Construction Co.) and J. W. Tarbox (C. R. I. & P.).

## The Missouri-Kansas-Texas Completes Warehouse at Dallas

**T**HE Missouri-Kansas-Texas has recently completed a seven-story reinforced concrete warehouse, 100 ft. by 200 ft. in plant, at a cost of \$475,000 at Dallas, Tex., to meet the growing needs incidental to the intensive commercial development in that city. The building has been leased to the Interstate Forwarding Company of Dallas which conducts a general transfer and forwarding business; it is sub-leasing wareroom and office space in the building to shippers. The building is located in the wholesale and jobbing district of the city with frontage on Pacific avenue, Market street and Jefferson street, and is served by tracks on Pacific avenue and Jefferson street, although the frontage on Jefferson street is used primarily as tailboard space for street vehicles.

The building is of the reinforced concrete flat slab type



A Typical Vertical Section Through the Warehouse

of construction with 20 ft. panels in both directions. It is designed for a live load of 250 lb. per sq. ft. on all floors, except the first which is designed for 400 lbs., provision being made in the design of the columns for the future addition of three more stories. The outer walls are brick with concrete trim. The interior partitions are of tile.

Except for those portions of the first and second floor reserved for office space the windows are restricted to a height of 3 ft. 5½ in. in each story close to the ceiling so that the maximum use of the storage space will not interfere with the natural lighting. The office space which fronts on Market street and the east half of the Pacific avenue frontage is provided with full height windows. All the warehouse windows have steel sash, and the office windows have hollow metal sash with wire glass. The story heights are 14 ft. 8 in. for the first and second floor, and 11 ft. 8 in. for the upper floors. Part of the second story is provided with a mezzanine floor.

There are two freight elevators with platforms 8 ft. by 16 ft. and two enclosed stairway extending to the top floor.

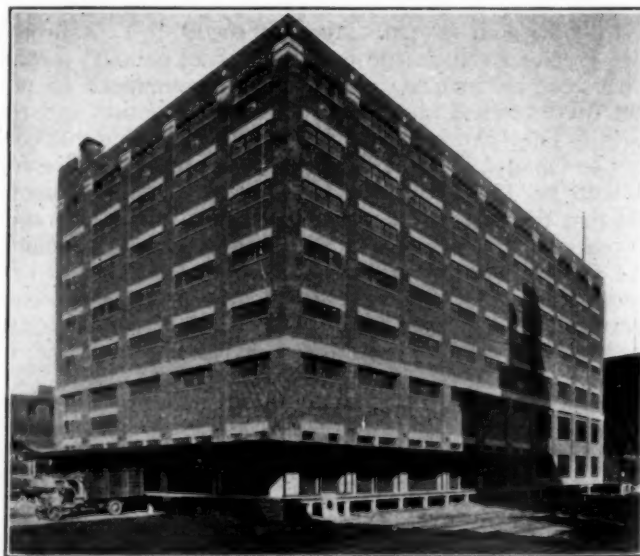
An automatic passenger elevator provides service to the lower four floors. Platforms of reinforced concrete are provided along the Pacific avenue and Jefferson street frontage and are covered for most of their lengths by a steel canopy roofed with Federal cement flat tile. There are 175 individual fireproof furniture compartments on



Typical Warehouse Space in the New Building

the fourth floor, a large fireproof rug room, a fireproof vault and record room on the first floor. The building is equipped with steam heat, a complete automatic sprinkler system and an A. D. T. system. The lobby and office toilets have terrazzo floors and marble wainscot. The office floors are covered with battleship linoleum.

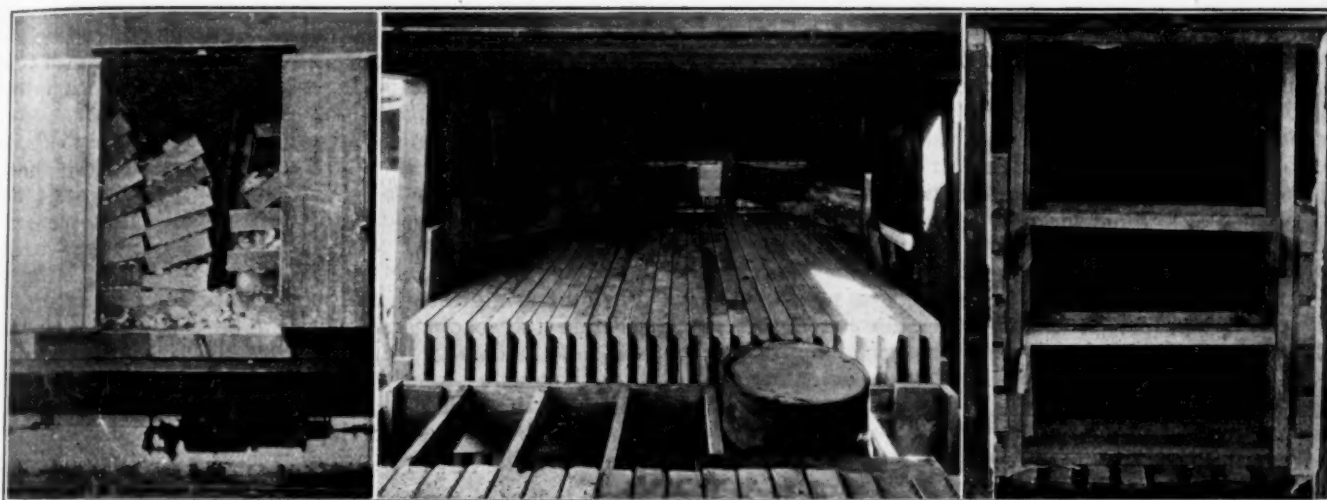
The building was constructed under contract by the



Loading Platforms Are Provided Along Pacific Avenue and Jefferson Street

Bellows-Maclay Construction Company of Dallas. The design and construction of the building was carried out under the direction of F. Ringer, chief engineer of the Missouri-Kansas-Texas, the plans being prepared under the direction of A. L. Sparks, architect for the railroad company.





The Results of Improper Bracing of Crates of Tomatoes

Cement Tile So Loaded That It Arrived at Destination With No Breakage

Crates of Tomatoes Properly Braced

## Claim Men Meet At Kansas City

*Work of A. R. A. division results in a further reduction of claims paid and presented*

THE thirty-fourth annual session of the Freight Claim Division of the American Railway Association, which was held in Kansas City, Mo., May 25 to 28, was attended by 375 members, the largest number in the history of the organization. The meeting was opened by an address by James McQueeney, president of the Kansas City Chamber of Commerce and general manager of the Loose-Wiles Biscuit Company. C. E. Johnston, vice-president and general manager of the Kansas City Southern, outlined the development of the American Railway Association and commented on the good work of the Freight Claim Division. T. W. Adams, contributing editor of the Kansas City Labor News, spoke on bus competition, condemning the motor truck as a menace to individual welfare, and recommending that the operation of trucks be placed under the jurisdiction of railroad commissions. W. F. Thiehoff, general manager of the Chicago, Burlington & Quincy, spoke on carload damage as effected by delay to fruits, vegetables and livestock.

C. A. Little, freight claim agent of the Chicago & North Western, outlined the method of procedure adopted by the roads in Chicago in the disposition of fruits and vegetables that had been pilfered or damaged during transit and which were sold in auction houses. Under the plan of the Chicago roads, cases of fruits in which two or three of the contents were missing were recovered instead of being sold. Of the damaged boxes taken from cars 60 per cent were recovered and sold, while the 40 per cent not in condition to be recovered were turned over to commissionmen. From October 18, 1924, to the present time, 8,540 cars were handled, of which 1,373 cars contained damaged shipments. Sixty per cent of the damaged shipments were recovered and sold at full value, and 33 1/3 per cent more was realized than in previous years. The same principle has been applied to cold storage shipments.

E. S. Hartman, supervisor of claim prevention of the Lehigh Valley described the rough handling campaign

on the Lehigh Valley which began January 1. Detailed causes of claims were exposed by employees at meetings held throughout the system and corrective measures resulting therefrom were applied to the whole road. He showed that it cost \$41 to stop a train, take out a hot box car, stop another train, and place the hot box car in the second train. He stated that much of the rough handling of cars could be overcome with proper air brake inspection.

### Report of Committee on Freight Claim Prevention

Loss and damage claims paid in 1924 amounted to \$48,262,543 as compared with \$49,540,377 in 1923, a decrease of \$1,277,834. Of the total paid, \$28,488,128, or 59 per cent, was due to damage to freight while in transit, while \$12,166,818 or 25 per cent, was due to loss of freight. Claims aggregating \$7,607,597 or about 16 per cent were paid by the railroads growing out of delays to fruit and other freight while en route. Loss and damage claims presented to the railroads during the year totalled \$2,498,790 or a decrease of \$335,194, or 11.8 per cent compared with the number filed in 1923. Unadjusted claims carried over from 1924 were 23 per cent less than the number pending at the close of the previous year.

For the past four years there has been a general lowering of the percentage chargeable to less carload causes, these items having dropped from 39.5 per cent in 1921, to 28.5 per cent in 1924. There has been a continued decrease in the loss portion of the account, narrowing the problem down to carload damages as the big factor to be considered in claim prevention. The fact that 75 per cent of all cars are loaded by shippers and unloaded by consignees has made the problem more complex and future developments looking toward the prevention of such damages will depend upon increased co-operation on the part of the shipping public and the carriers.

Rough handling and unlocated damage represent 37 per cent of the total loss and damage bill. Efforts to

reduce these items must involve almost the entire railroad personnel, since practically every department of railroading has a part to play in this work. Delay accounts for 15.8 per cent of the total loss and damage bill, of which 73 per cent applies to fresh fruits and vegetables and 5.4 per cent to fresh meats, making 78.4 per cent applicable to refrigerator car traffic. Special plans should be adopted by individual roads to direct attention to ways and means of preventing delays of this class of traffic. Unlocated loss of entire packages has shown a continued improvement, the greater portion of the improvement being attributed to two remedies, that of securing proper proof of ownership before delivery of over and astray freight and the matching of overs and shorts at common points. If there is no laxity in regard to these two features as between agents at points entered by two or more carriers and proper supervision in regard to freight delivery astray, this situation will continue to improve.

Defective and unfit equipment causes 8.9 per cent of the total loss and damage bill. Grain and coal account for 52.7 per cent of the money charged to this account. There is need for a uniform plan of inspection at initial points that will insure not only the selection of suitable equipment for the commodity involved, but the keeping of permanent records as to the manner and extent of such inspection. In co-operation with the A. R. A., Transportation Division, efforts are being made to bring about desired results by the establishment of a standard inspection plan agreeable to all interests. As more than 50 per cent of the charge to the defective equipment account is in connection with two commodities, grain and coal, in which destination weights versus initial weights enter largely into the question of liability, there is need for increased weighing supervision and the maintenance of records in connection with such weights. Much can be accomplished if the individual lines will give careful study to the installation and operation of scales used by carriers as well as shippers and consignees. A careful survey of conditions with periodical follow-ups to insure observance of regulations will bring about a much needed improvement.

Loss and damage claims on fresh fruits and vegetables totalled \$12,058,603, an increase of about \$1,960,000 compared with 1923. Carlot shipments of fresh fruits and vegetables were the greatest on record, exceeding by 23,142 cars, or 2.6 per cent, those of the year before which marked the previous high point. It is planned to conduct a campaign during the months of July and August on perishable freight for the purpose of securing a thorough understanding on the part of employees engaged in the handling of this traffic as to the terms and provisions in perishable protective tariffs. Emphasis upon this subject has developed suggestions for needed changes in the provisions of the tariffs to meet practical application, and a sub-committee of the Freight Claim Prevention Committee is now at work on the question with the view of securing favorable consideration of the matter by the National Perishable Freight Committee.

Egg breakage increased from \$611,620 in 1923 to \$723,085 in 1924. The increase of approximately 18 per cent in this item for 1924 may be largely explained by the failure of many shippers to pack their eggs with six pads to the case. In co-operation with a national committee composed of shipper, packing supply and carrier representatives, the committee has continued its efforts to reduce this item to the minimum. As evidence of progress, 82.7 per cent of the shippers used excelsior pads in 1924, compared to 65 per cent in 1922. To obtain definite conclusions as to whether the egg package can be further standardized and improved, the committee

has arranged with certain large shippers, in co-operation with the U. S. Department of Agriculture, inspection bureaus and the American Railway Express Company, to conduct extensive tests under commercial conditions, of various methods of packing eggs for transportation.

For 1924 damage claims on clay sewer pipe and drain tile alone aggregated \$700,000 or approximately \$5.40 per car on an estimated movement of 130,000 cars. To deal more effectively with this problem, a committee consisting of representatives of the claim conferences, managers and clay products inspectors of inspection bureaus and others interested, has been organized. To ascertain whether the loading methods can be changed to reduce some of the damage, car impact tests have been suggested to be conducted jointly by the trade associations and the railways, the object being to determine the effect upon pipe and bracing as developed by a loaded car striking other loaded cars at various speeds on straight, level track.

#### Report of General Committee

The advisory boards which have been set up by the shippers in the several territories to co-operate with the Car Service Division of the American Railway Association have in several instances during the past year established contact with the appropriate Freight Claim Conferences through the Public Relation Committee of the latter organizations and doubtless in the near future similar co-ordination will have been effected in other territories. Such co-ordinated activities do not, under the articles of organization of the Advisory Board, deal with the matter of claim settlements, but have reference only to the reduction or elimination of causes which result from freight loss or damage. The joint work, therefore, has been restricted to that of claim prevention. The confining of the joint discussion to such subjects is wise. The committee further feels that this co-operative work should be carried on separately in each territory between the freight claim conferences and the appropriate regional advisory boards in such manner as may be mutually satisfactory and proper under conditions existing in each territory.

A record of freight claim office performance of the various carriers shows that during 1924 the 90-day settlements were 86.5 per cent as compared with 86.2 per cent in 1923. Both the number of new claims received and the number of adjusted claims at the close of the year showed decreases, the latter of 11.8 per cent and the former 23 per cent. The ratio of claims disposed of to claims received was 102.9 per cent in 1924 as compared with 100.2 per cent in 1923. The Freight Claim Committee of the National Industrial Traffic League in its report to the last annual session stated that the Freight Claim Committee has held no meetings during the past year nor found it necessary to meet in conference with the Freight Claim Division of the American Railway Association. The committee has had no complaints from members of the league of delayed settlements of claims.

Suggestions have been made in recent years that the practice of using ratios of loss and damage payments to freight revenue be discontinued and that there be used in lieu thereof a more logical basis of comparison. The advocates of this change are of the opinion that freight revenues are not within the control of the carriers but are largely determined by the government while the factors which produce loss and damage are the volume of traffic carried and the distance hauled. Under these circumstances it was suggested that the logical and proper method of comparison would be freight ton-miles rather than revenue. While it is appreciated that there are



certain disadvantages arising from the use of ratio of freight loss and damage to revenue and likewise that there are certain advantages to be derived from other comparisons such as cost per thousand ton-miles, most of the members of the Committee on Freight Claim Prevention and the General Committee feel that the use of freight loss and damage to revenue will have to be retained as the basic comparison regardless of what other practices of analysis may be followed by individual lines in addition thereto.

NUMBER OF FREIGHT LOSS AND DAMAGE CLAIMS PRESENTED PER MILLION REVENUE TON-MILES

Year	Million rev. ton-miles	No. of claims	No. of claims presented million rev. ton-miles	Per cent change
1914	288,319	3,231,230	.....	.....
1919	364,293	4,306,960	11.8	.....
1920	410,306	4,721,497	11.5	-2.5
1921	309,997	2,947,528	9.5	-17.4
1922	339,730	2,351,412	6.9	-27.4
1923	417,791	2,833,984	6.8	-1.4
1924	388,872	2,498,790	6.4	-5.9

AMOUNT OF FREIGHT LOSS AND DAMAGE CLAIMS PAID PER MILLION REVENUE TON-MILES

Year	Million rev. ton-miles	Amount paid	Amount paid per million rev. ton-miles	Per cent change
1914	288,319	\$33,671,219	\$116.78	.....
1919	364,293	104,587,174	287.10	+145.8
1920	410,306	119,833,127	292.06	+1.7
1921	309,997	92,276,314	297.67	+1.9
1922	339,730	48,084,955	141.54	-52.4
1923	417,791	48,471,466	116.02	-18.0
1924	388,872	45,975,675	118.25	+1.9

### Report of Secretary

Since the last report of the Division there have been 21 additions to the membership, the roll after taking into consideration certain eliminations and consolidations now totalling 588 freight claim and freight claim prevention officers. The mileage represented by these members totalled 277,708 miles, not including the mileage of member water carriers.

There was 1,335 claims submitted to the seven arbitration committees for decisions subsequent to the last annual session, 1,332 of them to the Loss and Damage Committee and three to the Overcharge Arbitration Committee. A total of 356 notices of appeal were received and 311 cases were forwarded to the Appeal Committee for decision. Of these 300 were on appeal from decisions of arbitration committees, seven were cases on which the arbitration committees failed to reach majority decisions and four were for interpretation of rules, while 35 appeals were withdrawn. Of the 1,335 arbitration claims, 361 or 19.5 per cent were in amounts of \$100 or less, 669 or 50.2 per cent were between \$100 and \$500 and 405 or 30.3 per cent were for more than \$500. Of the latter 179 or 13.4 per cent were for amounts over \$1,000. Of the 311 appeal claims, 33 or 10.6 per cent were for less than \$100, 139 or 44.7 per cent were between \$100 and \$500 and 139 or 44.7 per cent were for over \$500. Of the latter 71 claims or 22.8 per cent of the total were for more than \$1,000.

### W. B. Kellett Urges Direct Investigation

W. B. Kellett, chairman, in his address suggested that direct investigation be employed as a proper plan of ascertaining facts in claim settlements. He also spoke upon the four-year cycle of claims, stating that the cycle will be broken when carriers maintain and operate an active campaign upon carload movements. His paper in part is as follows:

No one can question the faith, the honesty of purpose and the manifest confidence within the circles of the Freight Claim Division which leaves the records of the carriers as an open book, one to the other, and the freight claim representatives with the authority to investigate and settle claims, one for the other. This ar-

angement in itself was perhaps the most noticeable and effective act of the carriers toward the prompt disposition of claims. The fairness and desirability of this arrangement has not been questioned except possibly in a few minor instances on account of some local conditions indicating that the plan of itself is desirable and should be respected.

Recently there have been many instances called to the attention of the General Committee where the real basis of the "direct investigation" plan has been destroyed and made non-operative through recharging the apportionment made by the paying carrier, thus leaving the paying carrier in doubt and forcing arbitration, indicating either a difference of opinion or misinterpretation of rules; this practice in some quarters appears to have become so prevalent that it is retarding claim settlements and has come in for severe criticism at the hands of interests representing the shippers or consignees. Admitting that the "direct investigation" plan is a proper and desirable method of ascertaining facts, and admitting also that the respective carriers are working under a code of rules susceptible of interpretation, the question naturally arises as to what particular element, feature or problem brings about the conditions above described, which are destroying the efficacy of "direct investigation" and prompt distribution after payment.

There appears to be a tendency upon the part of certain carriers to get away from the responsibilities developed under "direct investigation," and the divergence of opinion in some quarters has resulted in defeating the plan of "direct investigation" and settlement. Indeed, some carriers desire to review their agent's replies to freight claim agents other than themselves. Some carriers are demanding that their connections investigate the claims and then refer the entire investigation of them for inspection before any payment is made. These and other practices have brought about a lack of good faith, honesty of purpose and confidence, one with the other, which evil is aiming at the very foundation of the division and is viewed with apprehension by those serving the division. In the estimation of those members, many of the carriers are getting too far away from each other and failing to maintain the co-operation and confidence necessary to the progress and support, not only for the Freight Claim Division, but of the entire railroad industry, for the reason that where the carriers' representatives cannot agree among themselves, the fact becomes apparent to the public, and it is folly to assume that they can agree with the public.

It is interesting to note that during the prior years, beginning with 1904, the loss and damage claim payments increased for a four-year period, then decreased for a two-year period. This cycle of increase and decrease manifested itself until the high peak of 1920, from which time a decrease occurred, the payments of 1924 being one and one quarter million dollars under 1923. The thought has been expressed by some of our best authorities who have studied the question fully and completely that this increase in claim payments will be finally and fully broken when the carriers maintain and operate an active campaign upon the carload movements where the bulk of the payments are being made today.

### W. F. Thiehoff Suggests Remedy for Claim Prevention

W. F. Thiehoff, general manager of the Chicago, Burlington & Quincy, in discussing carload damage as effected by delay to fruit and vegetables and livestock, emphasized the duties of individuals connected with the transportation of products and urged that each department do its duty. His paper in part is as follows:

The payments on live stock, fresh fruits and vegetables amount to \$14,327,723 or approximately 41 per cent of the total carload payments and while the payments on these commodities were spread over practically every railroad in the U. S. and Canada, the big bulk of the payments (about 90 per cent) were located with about 20 of the larger railroads and the same per cent—90—can be traced to these three causes, viz: rough handling, delay, and failure in refrigeration or ventilation. Of the total amount paid there was chargeable to car load delay \$7,300,989.00 and of this amount \$6,339,483.00, or 86 per cent was paid on live stock and fruits and vegetables. Surely, there is food for thought and field for labor in these figures.

If, by concerted efforts we can reduce claim payments on live stock, fresh fruits and vegetables because of delay, 20 per cent we will have saved more than the sum paid for claims on all other car load commodities for delay. Delay frequently contributes to temperature failures and rightfully can be held responsible for claims based on deterioration due to delay and for claims based on market declines and additional feed charges. These amounts spread on a car handled basis produce on stock, average payments of \$1.51 per car on 1,684,825 cars. On 998,549 cars of fresh fruits and vegetables the average claim payment reached the staggering figure of \$11.80 per car.

Orders for cars should be placed by the shipper far enough in advance of loading date to permit of supplying in good condition the class of equipment best suited to handle reasonably the shipment to be moved. Dealing with stock movement first, during summer months stock cars for hog loading should be cleaned and bedded with such materials as will not generate heat or gases when water is applied. Occasionally, perhaps frequently, to avoid delay in supplying cars for movement on so-called "stock schedule" days, cars are furnished without being properly cleaned or conditioned, resulting in payments for dead animals arriving at market that would have been avoided if the car had been cleaned before loading.

The shipper should, in every instance, place a written order showing the date and schedule he desires to load on and for; the length or capacity of car needed, whether single or double deck and kind of stock to be loaded. Our mechanical officers can render a valuable service by having the car in good repair, brasses and journals in good condition, boxes well packed and oiled so there will be no delay for patching or from conditioning hot boxes.

Assuming cars are ordered and supplied on time, they should be switched and set so the shipper can load and have the contract signed when the train arrives on which the shipment is to move. The agent must have cars sealed if necessary, bills ready and memo furnished the conductor on arrival so cars may be picked up and placed in train in proper location with reference to destination without unnecessary delay.

While the average of \$1.51 per car claim payments on stock is relatively low as compared with fruits and vegetables the cars handled are almost double and the revenue per car received for the movement is very much less. The necessity for handling without unreasonable delay is just as important.

When ready to load the agent should inspect the commodity, note its condition and carrying qualities and make record of any exceptions, supervise loading when possible and check stripping and bracing; have bill of lading show full instructions under which shipment is to move as provided for in Perishable Protective Tariff No. 2 to accompany the car; give symbol number to each car and report it to the superintendent of transportation, whose organization should check and follow through and if the car is set out short of destination account bad order,

wire the chief dispatcher for particulars and keep open file until car is moved. The chief dispatcher should inform the master mechanic direct and arrange for repairs so the car may be picked up by some available train and be brought to the terminal so it can be placed in the next following schedule handling perishable freight for the same connection or destination.

Too frequently a mistake is made in having the car picked up and moved through a terminal on a slow schedule train that puts the car out of line and is run around by the following through perishable freight schedule and the delay is multiplied—likewise the claim. The numbers of cars set out between terminals, picked up and brought in for following schedule should be given to the yardmaster and request made to have special inspection made and attention given to protective service necessary. Occasionally this is overlooked and cars are moved to a regular icing-heater station without intermediate attention, resulting in claim payments for deterioration due to delay.

Delays to trains handling stock and perishable freight should be checked daily and carefully analyzed and the performance should be discussed at operating meetings. Frequently unavoidable delays can be partially or entirely overcome by close co-operation. When they occur the chief dispatcher should inform connecting division officers so the train load may be adjusted and such other arrangements for quick handling made as will meet the requirements. Yardmasters, yard employees, road train and enginemen, if informed as to the need for special effort will join in maintaining performance that will avoid claims for delay and warrant the confidence of the shipper. A satisfied customer is a desirable asset.

The cost of handling one hundred tons one mile is the measure of operating efficiency. As the amounts paid out for claims are charged into operating costs it may be economy to reduce the train load to maintain the schedule. Each case should be given special consideration. Freight service inspectors should make suggestions freely as to changes in schedules that are advantageous. They are closely in touch with claim causes and their experience is valuable as prevention is their recognized aim in life.

Suitable cars in good repair are only one of the mechanical department responsibilities. Better average results can be obtained if locomotives, engine and train men are assigned to schedules handling live stock, fruits and vegetables, than to run these schedules in the pool. This method is sometimes objectionable to engine and train men as a class but the more experienced will agree that good results are obtained when they are thoroughly acquainted with the requirements of the particular service and handle the same locomotive regularly on the same schedule, trip after trip.

When shipments arrive at connecting line junction or terminal the yard employees should be ready to switch just as soon as inspection has been completed, and if the train has cars for several connecting lines requiring separate movement, arrangements can and should be made to inspect the cars for distant for most important connections on arrival so they may be moved while inspection of the remaining cars for other disposition is made. If protective service is necessary it should be rendered by the delivering carrier immediately before delivery.

Rough handling contributes to delay. If an engineer makes an emergency stop at a coal or water station, if a train man in picking up a car gives it a kick and fails to control it, or if a yardman in switching does the same and as a result of the shock a drawbar or draft rigging is damaged, it delays not only that shipment but others in the time it takes to switch out and set for repairs, in ad-



dition to the time held for or consumed in making the repairs or in transferring the load. Live stock, fresh fruits and vegetables are commodities that require careful handling.

Another source of delay that is more or less serious is the reconsignment or division of shipments en route. Cars for the same destination are grouped in the train together and preparations made to inspect and condition en route according to destination; frequently a change causes delay to several other cars, or perhaps a train schedule while the car is being switched out of one group or schedule into another, and occasionally the change in destination requires protective service not contemplated or arranged for under the original report. Diversions and reconsignment can be very much reduced if shippers and associations will organize to stabilize markets, regulate shipments and consign to definite markets.

Supply and demand influence claims. A glutted market frequently reminds the consignor that he should check up the movement of his shipment and file claim if off schedule. If not, then consign to some other market. Let us keep in mind that these changes often require moves from team or delivery track to train yard, or train yard to connecting line in and through congested terminals where the move is expensive and delays are frequent—often of such duration as to cause complaint, criticism or claims by employees, officers or shippers not familiar with the terminal service problem. We should organize to handle diversion orders and reconsignments in minimum time and maximum accuracy but continue to urge a reduction or elimination of the orders.

#### T. W. Adams Opposes Bus Transportation

T. W. Adams, contributing editor of the Kansas City Labor News, addressed the meeting on bus transportation

and urged that the operation of buses be placed under the jurisdiction of the state commission. He recommended that the speed of buses be regulated. His address in part is as follows:

We have in the course of our more or less haphazard development diverted from the railroads, a great aggregate tonnage through the building of the Panama canal. It is proposed that we divert still more traffic to the inland waterways. Through the development of the motor bus and the motor truck transportation we are diverting still other great volumes of traffic. Only recently has it dawned upon the American public that the remaining traffic which we in our grace leave to the railroads must bear the entire burden.

The motor truck and the motor bus duplicate a service now rendered by other means of transportation. The motor truck and the motor bus are under no compulsion of public regulation as to stated hours of service and stated schedules. They provide that service at such times as it may be profitable, and during such times when it is not profitable, when the trips are to be made at a loss, they leave it to our good friends the railroads.

We are asking your co-operation to bring about the return of the status quo, so that not only steam railroad but that of electric, urban and interurban, motor bus and motor truck traffic and *all* transportation agencies shall be placed under the control, supervision and direction of public service commissions of the states and of the interstate commerce commission.

And when that time comes I hope to see among those regulations one limiting the speed of motor buses, to that rate that safety requires and demands, and probably another regulation that will provide that the great motor truck lines carrying freight shall be restricted in their use of the highways to the hours between sunrise and sunset.

## Air Brake Convention Adjourns

*Concluding sessions at Los Angeles—Reports on passenger train handling and brake pipe leakage*

ON May 29 the Air Brake Association concluded at Los Angeles, Cal., one of the most successful conventions it has ever held. The attendance and interest, as evidenced by discussion of the reports, were excellent. In the final sessions the reports on triple valve limits, brake pipe leakage and foundation brake gear stood out perhaps more strongly than the others.

### Report on Passenger Train Handling; Graduated Release

This subject was presented last year to the Air Brake Association, and the Central Air Brake Club was requested to continue the committee with a view of amplifying the subject by presenting further data for consideration. In responding, an endeavor has been made to clarify several points.

Graduated release is not affected by any uniform range of pressures from 70-lb. to 110-lb. brake pipe pressure, providing no other condition is changed when using the higher or lower pressure as a standard. To illustrate this, a series of standing tests, with chart records, were made with 70 lb., 90 lb. and 110 lb. brake pipe pressures on a

12-car train, having mixed LN and UC and No. 6 ET locomotive brake equipment. All are familiar with the fact that during the application the brake pipe reductions govern how much cylinder pressure is developed for the application. A light increase brake pipe pressure causes a small graduation off, whereas a heavier increase causes more brake cylinder pressure to escape.

Practically the only difference between the 70-lb. and 110-lb. brake operation with high pressure is that the brake pipe pressure and auxiliary reservoir pressure move faster during the application when using the higher pressure. It always has been essential to carry sufficient excess pressure with any brake equipment. If the air supply conditions are suitable to carrying sufficient excess pressure when using 110 lb. brake pipe pressure on ordinary trains, the requirements will be met satisfactorily when operating graduated release with 110 lb. brake pipe pressure.

#### Handling Trains in Suburban Service

The method of handling fast trains in suburban service under average operating conditions is about as follows: "Run the train in close to the station. Make the first brake pipe reduction of seven pounds or eight pounds

before reducing the throttle. Just as soon as the brakes have time to begin to hold, reduce the throttle to drifting requirements.

"Immediately reduce the brake pipe pressure for more holding power, using split reductions, till about 10 lb. to 20 lb. total brake pipe pressure is reduced, and the train is 50 ft. to 100 ft. from the final stop and under control so that graduation off can be accomplished.

"Now, by two or three graduations off, spot the train at the desired point, with comparatively low cylinder pressure at the finish. Pre-release the last one if appropriate or desirable.

"In graduating off, use the brake valve in release or running position, as described for road service in last year's paper.\* While it has been recommended to use release position for the first graduation off, when the trains range from five to eight cars or over, you will find that other items will be found to influence this, such as the kind of brake valve in use, the available release pressure, the capacity of feed or control valve and local conditions on each property. Future experience derived from use will be the best guide.

"Where the stops are made from lower speeds and 12-lb. to 15-lb. brake pipe reductions are used, operate closer to the final stop before graduating off. Under such conditions, this will be as short as 25 ft. to 40 ft., using one or possibly two graduations off and one final release.

"By operating in this manner you are requiring the engineman to take no chances. He has some available service brake to fall back upon. He can correct his judgment both by graduating the brake on in quick successive reductions and graduate off. Try to avoid graduating off too much. In case a reapplication is required, do so carefully, with light reductions."

#### Single Shoe vs. the Clasp Brake

We would not consider this paper complete if we did not refer to the good passenger train handling results obtained by a properly designed foundation brake rigging, as compared to the much lesser favored installations which have been fostered in the past. We refer primarily to the modern clasp brake, which is now being quite generally installed on new passenger equipment, as compared to the low-hung, single shoe four and six-wheel trucks, many of which are still being perpetuated. The clasp brake is greatly superior to the single shoe brake in the elimination of false piston travel, or, uniform travel for all cylinder pressures.

Summing up the advantages of the clasp brake over the single shoe brake, we find:

- 1—Normal cylinder pressure per pound of brake pipe reduction.
- 2—Shorter stops in emergency due to reduced brake shoe duty.
- 3—Reduced brake shoe wear.
- 4—Reduced brake shoe and truck maintenance.
- 5—Fewer brake shoes dragging and reduced train resistances.
- 6—Longer trains hauled with less loss of time, using the same motive power equipment.
- 7—Smoother stops.
- 8—Fewer slid flat wheels, due to shocks, stuck brakes, and the transfer of the load from one pair of wheels to another.
- 9—Fewer hot journal bearings.

This subject of modern foundation rigging for passenger cars is very important to the railway which uses high pressure for brake operation, because of the need of all the flexibility that it is possible to obtain.

The report was signed by James Elder (C. M. & St. P.), W. J. Devine (C. & N. W.), and L. M. Carlton (Westinghouse Air Brake Company).

#### Discussion

In discussing this report a question was raised regarding the adaptability of graduated release to use under all

conditions. The consensus of opinion of Chairman Elder and other members of the association having extensive experience with his method of releasing brakes was that they have never encountered any special conditions which militate against the use of graduated release.

Several members spoke in favor of the two application on split reduction method, however, maintaining that there is not time in high speed operation to make numerous graduations. There was a difference of opinion on this point, other members saying that stops are being made every day in fast suburban service from speeds of 45 miles an hour in 40 seconds by split reductions of brake pipe pressure.

As brought out in the report, this gives the engineman a chance to correct his judgment of the distance required for a stop by making slight graduations on and off. It was maintained on the floor of the convention that besides adaptability to suburban service, graduated release is being used successfully in passenger trains up to 20 cars and down heavy mountain grades up to 3 per cent.

The association voted to accept the report and discharge the committee with thanks for its faithful work. Several members expressed the opinion that the reports on passenger train handling last year and this were far in advance of the average practice of the association, and that both reports should be studied carefully in the coming year with a view to a full understanding of the possibilities of graduated release and the adoption of such practices recommended in the report as may be suited to the special conditions on each individual road.

#### Report on Brake Pipe Leakage

The committee on brake pipe leakage submitted a progress report in which it summarized the purposes of the committee's investigations as follows: (1) To secure representative data on brake pipe leakage (as distinct from the brake system leakage) as it exists in current train service; (2) to secure data that will show the relation between air leakage from the brake pipe proper and the total leakage from the brake system; (3) to devise means for measuring and recording the total leakage of trains while being operated in regular service; (4) to secure data which will show the ratio of compressed air used for braking purposes and wasted in maintaining leaks; (5) to analyze the data with respect to the effect of leakage on brake operation; (6) to determine what degree of leakage in the brake system can be tolerated without serious interference in the brake action or operation; (7) to analyze the data with respect to cost of the compressed air wasted by leakage; (8) to analyze and compare current methods of inspecting and testing for brake pipe leaks as well as for methods of repairs and maintenance.

The most important work undertaken by the committee was the development of a means for measuring continuously and recording automatically the total amount of air supplied while operating trains in regular service. The report showed in detail the apparatus used for this purpose as well as that employed while making a large number of tests under actual service conditions with train tonnages up to 4,475. The measuring and recording devices were installed in a test car which was piped so that it could be placed in the train directly behind the locomotive tender.

The total number of cars handled during these tests were 2,768, of which 1,119 cars had 8-in. brake equipments and 1,649 cars had 10-in. equipments, the percentages being 40.5 per cent and 59.5 per cent, respec-

\* See page 1151 of the May 10, 1924, issue of the *Railway Age*.



tively. The total number of car-hours covered by these tests was 6,772.3 and 357,195 cu. ft. of free air was used to charge the test trains. Of this amount, 189,563 cu. ft. was consumed in brake pipe leakage. The percentage of brake system leakage in terms of brake pipe leakage was 88.5 per cent, or in other words, the leakage from the volume on the auxiliary reservoir side of the triple valve pistons was 88.5 per cent of the leakage from the brake pipe volume. Assuming that the legitimate use of the brake requires one full service application per car-hour of operation, only 3 per cent of the total amount of air is required to overcome leakage in the average brake system.

If the locomotive is equipped with the most modern type of air compressor, the amount of steam required to compress the air used per car-hour of operation would be 12.8 lb. For example, a 100-car train operating for 10 hr. would represent on the above basis, a total of 1,000 car-hours and the locomotive would be required to evaporate 12,800 lb. of water in order to supply the compressed air needed, making a total of 1,532 gal. of water. If it is assumed that the efficiency of the locomotive boiler will permit the evaporation of 7 lb. of water, to a pound of coal, 1,000 car-hours will require the burning of 1,830 lb. of coal on the locomotive in order to supply the necessary steam to the air compressor.

Figures compiled from the statistics of a railroad which owns between 900 and 1,000 locomotives shows that the total operating freight car-hours during the year 1924 was 89,587,922 for a total of 10,930,392 cars handled. The cost of the compressed air used for the year on the basis of the average rate of air used found in these tests would be \$409,864. Taking this on the basis that 97 per cent of the air supplied is wasted, the year's expense chargeable to brake system leakage would be \$397,568.

The total number of leaks found on 2,424 cars tested was 10,634. These figures were the result of a questionnaire sent out to members of the association located in Canada and the United States. The total possible leaks on this number of cars that could be reported is 65,448, so that in these tests, leaks were found at 16.33 per cent of all the places tested, a ratio of one leak in every six possibilities. Of the 2,424 cars, 632 had 8-in. brake equipments and 1,792 cars had 10-in. brake equipments. The percentages being 26 per cent and 74 per cent, respectively. Of all the leaks found, 42.5 per cent were of such a nature as to be considered serious.

According to the committee, the most important fact brought out by the running tests was the exceedingly high average rate of brake system leakage. The test showed that for the total of 6,772 car-hours of operation, the brake system leakage averaged about 53 cu. ft. per hour for each car or nearly 1 cu. ft. per minute per car. This leakage was made up of brake pipe leakage and auxiliary reservoir volume leakage, the latter being approximately 88 per cent of the brake pipe leakage. If it can be assumed that the running test data secured was representative, the amount of air actually required for brake operations was less than three per cent of the total amount which the compressor supplied to the train.

The committee in closing its report, arrived at a number of conclusions, some of which are as follows:

That it is important that regular train inspection should include tests for brake system leakage as well as brake pipe leakage.

That a considerable portion of the brake system leaks can be found in the threaded joints of the pipe fittings and air brake equipment devices.

That the tests showed at least 97 per cent of all compressed air used is wasted by brake system leakage.

That the cost of air wasted and the reduced air brake efficiency due to brake leakage will amply justify a more extensive maintenance program.

That poor brake equipment installation designs are frequently responsible for difficult brake equipment maintenance.

The committee also recommended that special attention be directed toward brake installation design of existing cars and new cars with a view to making improvements which will make leakage maintenance easier, such as better clamping, elimination of unnecessary pipe joints, reinforcement of pipe threads, etc.

The committee report was signed by C. H. Weaver (New York Central), C. B. Miles (C. C. C. & St. L.), W. W. White (Michigan Central), and R. E. Miller (Westinghouse Air Brake Company).

### Discussion

The importance of differentiating between brake pipe and brake cylinder leakage was emphasized, and the necessity of eliminating as far as possible all leaks in the brake system, wherever found. Members of the association corroborated statements contained in the report regarding the wide prevalence of brake system leakage and the resultant heavy expense to the railroads in the way of increased fuel and compressor maintenance costs.

One member suggested that couplings be used when possible in place of unions to eliminate an extra joint and another called attention to the angle cock keys as a prolific source of leaks. He stated that many new cocks received from the manufacturers fail to pass the tests, although this is not always due to defective workmanship. Of 200 such defective cocks, seven were caused by mishandling in shipment and the others passed the test successfully on being heated and the key turned a few times.

Mr. Miles stated in reply to a question, that the committee is not in a position at the present time to recommend definite leakage limits, but believes that the figure will be about 35 cu. ft. per minute.

The members were urgently requested to make the leakage testing device described in the report and after conducting tests on each road, submit as much information as possible on actual conditions. With this representative information at hand, the committee will be in a position to make definite recommendations in its report next year. The committee was continued.

### Election of Officers

The following officers were elected for the year 1925-26: President, R. C. Burns, Pennsylvania; first vice-president, M. S. Belk, Southern; second vice-president, H. A. Clark, Soo Lines; third vice-president, H. L. Sandhas, C. R. R. of N. J.; treasurer, Otto Best, Nathan Manufacturing Company. F. M. Nellis was elected life secretary last year. The executive committee, including the new members stands: W. W. White, M. C.; William Clegg, C. N.; R. M. Long, P. & L. E.; W. F. Peck, B. & O.; and C. H. Rawlings, D. & R. G. W.

The association voted to hold its 1926 convention at New Orleans, La.

DURING THE 14 years that the Copper River & Northwestern has operated between Cordova and Chitina, Alaska, 131 miles, not a passenger has been killed, and only two have suffered injuries, these being slight. During the five years ending with 1920 this road lost by death only one employee in 782,088 train miles. The reasons why the Copper River line operates with so few accidents are plain. No trains are run at night and even in the daytime they do not run at high speed; also, due to the character of the country, there is little trespassing on the right-of-way. The road, now extending to Kennecott, 65 miles beyond Chitina, has 18 locomotives and 305 cars; and runs one train each way each week-day.

# Milwaukee Reorganization Plan

*Calls for reduction of fixed charges by more than  
\$10,000,000—Assessment on stock*

**K**UHN, LOEB & CO. and the National City Company, as reorganization managers, made public on Tuesday evening the detailed plan for the reorganization of the Chicago, Milwaukee & St. Paul. Only 74 days had elapsed between the beginning of the receivership on March 18, and the announcement of the plan which is expected to make possible the financial rehabilitation of the property.

The important provisions of the plan are as follows:

1. A net reduction in the amount of fixed interest bearing securities by over \$227,000,000 and a reduction in the fixed annual interest charges from about \$21,800,000 to about \$11,467,000 or over \$10,000,000.
2. The funding of more than \$185,000,000 of obligations maturing during the next ten years into long term obligations, the interest charges upon over \$130,000,000 of which will be contingent upon earnings.
3. An assessment of \$28 on the preferred stock and of \$32 a share on the common. This will provide over \$70,000,000 in cash, for \$60,698,820 of which new 50-

first and refunding mortgage mentioned above. One of these will be a closed mortgage to secure an issue of 50-year, 5 per cent mortgage bonds limited in amount to \$60,698,820, which bonds are to be issued against the assessments on the preferred and common stocks as above noted.

The other mortgage will secure an issue of 5 per cent adjustment mortgage bonds to be limited in amount to \$230,950,800 plus the amount which may be issued in connection with the liquidation of the 6 per cent note to the government of \$20,000,000 dated November 1, 1920.

The interest on the adjustment mortgage bonds is to be non-cumulative prior to January 1, 1930, but cumulative thereafter. There is to be a sinking fund of one-half of one per cent, which obligation will be cumulative. Adjustment mortgage bondholders will receive interest if earned, except that one-half of the first \$10,000,000 of net income may be set aside in a special account available for capital expenditures or other defined purposes.

The reorganization plan will not disturb \$181,370,400

COMPARATIVE TABLE SHOWING CAPITALIZATION AND INTEREST CHARGES

	Present capitalization	Present fixed interest charges	Capitalization giving effect to reorganization plan†	Fixed interest charges giving effect to reorganization plan†
Undisturbed bonds .....	\$181,370,400	\$8,431,904**	\$181,370,400	\$8,431,904**
Timber loan to be liquidated.....	2,200,000	110,000	.....	.....
Notes held by U. S. Government to be paid, compromised or settled.....	55,000,000	3,300,000	.....	.....
Bonds to be exchanged .....	230,950,796	9,994,889	.....	.....
Fifty-year five per cent mortgage bonds.....	.....	.....	60,698,820	3,034,941
Adjustment mortgage bonds .....	.....	.....	230,950,796	.....
Preferred stock .....	115,931,900	.....	115,931,900††	.....
Common stock .....	117,411,300	.....	117,411,300‡	.....
Total .....	\$702,864,396	\$21,836,793	\$706,363,216	\$11,466,845

\*Other than the three 6 per cent notes held by the United States Government.

†The amounts here stated may be increased by the amount of any securities which may be issued in connection with the liquidation of the 6 per cent note of the Railway Company dated November 1, 1920, held by the United States Government. These amounts include the new securities issued for new money.

\*\*Aggregate of interest for full year at respective rates on principal amount of obligations outstanding June 1, 1925.

††This amount will be increased by the amount of preferred stock required to be applied in settlement of general claims against the Railway Company.

‡Taking no par value common stock at \$100 per share.

year, 5 per cent gold mortgage bonds will be issued, but for the balance of which no securities will be issued. For each share of the present preferred stock there will be issued one share of new non-cumulative 5 per cent preferred stock and \$24 of the new bonds. For each share of common there will be issued a share of new common, with or without par value as may be later determined, and \$28 of the new bonds. The remaining \$4 of the assessment in the case of these shares will be used for payment of the expenses of the reorganization.

4. Liquidation of the Milwaukee's \$55,000,000 debt to the United States Government, thereby releasing \$18,000,000 general mortgage bonds now pledged to secure the notes held by the government. The company also has an additional \$8,370,000 of these bonds in its treasury, making a total of \$26,370,000, which will be available for capital requirements.

5. Creation of a new first and refunding mortgage ranking ahead of all bonds issued in the reorganization plan to provide for future capital requirements. None of the first and refunding mortgage bonds are to be issued in the reorganization.

6. The creation of two mortgages in addition to the

present obligations in the hands of the public, including \$100,547,000 general mortgage bonds, various divisional bonds, equipment trusts, guaranteed bonds of the Chicago, Terre Haute & Southeastern, etc.

## Government Loans to Be Liquidated

As above noted, \$55,000,000 of obligations to the government are to be liquidated as follows: 6 per cent note of \$20,000,000, dated November 1, 1920, due March 1, 1930, secured by \$32,000,000 refunding bonds, series Z; a 6 per cent note of \$25,000,000, dated March 1, 1922, due March 1, 1927, secured by \$12,000,000 general mortgage bonds, series D, and \$30,329,000 refunding bonds, series Z, and a 6 per cent note of \$10,000,000, dated March 15, 1922, due March 1, 1930, secured by \$6,000,000 general mortgage bonds, series D, and \$10,500,000 refunding bonds series Z. The \$25,000,000 and \$10,000,000 notes are to be paid in cash. For the \$20,000,000 note due March 1, 1920, there is offered to the government the option to receive either (a) \$17,000,000 cash and \$3,000,000 par value of new preferred stock with full interest on the note to date of settlement in cash, or (b) \$32,000,000, 5 per cent adjustment mortgage bonds, interest on which



will be computed from the date to which interest is paid on the note.

With reference to the government loans, the plan states:

"All those who have participated in the formulation of the plan are convinced that the interests not only of all the security holders but also of the reorganized system would best be served by the present liquidation of these notes.

"Were the government to foreclose upon its collateral and to exchange that collateral for new securities under the plan, the funded debt of the new company would be increased at least \$35,000,000, and its interest charges at least \$1,750,000. All this increase would rank on a parity with the new securities to be issued to present bondholders, and at the same time the \$18,000,000 of general mortgage bonds would be left outstanding and the new company deprived of their use for future requirements. Such a dilution of the security of the bondholders, and the great additional burden thus put ahead of the stockholders' equity, would be seriously detrimental both to the new company and to its security holders.

"Were the debt to the government to be extended and the new securities issuable against the present collateral, or other new securities, continued as collateral, the question of the ultimate refunding of the debt would remain unsettled and a constant drag on the new company's credit. Bonds would have to be reserved under the new first and refunding mortgage for such refunding,

shares, which shall be without par value or may have such par value as the reorganization managers shall determine. All of these shares are to be offered to the holders of the present common stock, in addition to which, as above noted, there will also be an assessment. All of the preferred and common stock will be deposited under a trust agreement to continue not less than five years. There will be five voting trustees, three approved by the bondholders committee, one by the preferred stockholders committee, and one by the common stockholders committee.

With reference to the plan in general, the bankers said that,

"The reduction of fixed interest bearing securities is accomplished by the conversion of \$230,950,796 of bonds secured under the refunding mortgage and the Puget Sound mortgage into income obligations the lien of which will be subordinate to the new securities provided for the raising of new money. The stockholders cannot be expected to provide the large amount of new money presently required unless (a) they are given for a substantial part of their new money a security the interest upon which is certain, (b) the New Company is freed from a constant threat of financial embarrassment through fixed interest obligations for which there is no substantial margin of earnings, and

SCHEDULE OF PARTICIPATION IN DISTRIBUTION OF NEW SECURITIES

Existing Securities		Cash adjustment of interest to Feb. 1, 1925		New fifty year five per cent mortgage gold bonds		New five per cent adjustment mortgage bonds		New preferred stock		New common stock	
Amount	Description	Per \$1,000 bond	Total amount	Per cent	Amount	Per cent	Amount	Per cent	Amount	Per cent	Amount
\$11,831,515	European Loan bonds.....	\$6.66 2/3	\$78,876.76	100	100	100	\$11,831,515	100	100	100	100
36,344,981	Four per cent bonds, due 1925.....	6.66 2/3	242,299.88	100	100	100	36,344,981	100	100	100	100
50,000,000	Four and one-half per. bonds, due 1932.....	7.50	375,000.00	100	100	100	50,000,000	100	100	100	100
33,369,000	Four per cent bonds, due 1934.....	3.33 1/3	111,230.00	100	100	100	33,369,000	100	100	100	100
27,175,000	Puget Sound bonds.....	3.33 1/3	90,583.33	100	100	100	27,175,000	100	100	100	100
43,089,000	Refunding bonds, series A.....	15.00	646,335.00	100	100	100	43,089,000	100	100	100	100
29,141,300	Refunding bonds, series B.....			100	100	100	29,141,300	100	100	100	100
115,931,900	Preferred stock.....			24	\$27,823,656	100	\$115,931,900	100	100	100	100
117,411,300	Common stock.....			28	32,875,164	100		100	100	100	1,174,113 shares

thereby materially weakening the value of that security and its adequacy as a provision for future capital expenditures.

"It is believed that offer (a) is entirely liberal to the government and, for the reasons stated, of advantage to the new company. Offer (b) it is also believed fully recognizes the government's position as a secured creditor through the refunding bonds held as collateral. In order to avoid or reduce the increase of capitalization which would result from the acceptance of offer (b), the reorganization managers are expressly authorized, in case said offer shall be accepted, to purchase for cancellation such principal amount of new adjustment mortgage bonds as they may determine not exceeding \$32,000,000 and at such prices as they may determine not exceeding an average of 62 1/2 per cent of principal amount (which is the price at which the refunding bonds are held as collateral for the note)."

There is also to be liquidated the so-called timber loan due July 2, 1925, \$2,200,000.

The total obligations to be exchanged under the plan aggregate \$230,950,796. This total is made up as follows:

For 4 per cent bonds, due 1925.....	\$36,344,981
For European loan bonds.....	11,831,515
For 4 1/2 per cent bonds, due 1932.....	50,000,000
For 4 per cent bonds, due 1934.....	33,369,000
For Refunding bonds, Series A and Series B.....	72,230,300
For Puget Sound bonds.....	27,175,000
Total .....	\$230,950,796

In addition there will be retired \$117,217,200 series Z refunding bonds, of which \$44,388,200 are in the treasury and \$72,829,000 have been pledged to secure the notes to the United States government, which notes as above noted will be liquidated.

The new preferred stock will total \$115,931,900 as above noted. This stock is to be issued in exchange for the present preferred stock, in addition to which there will be an assessment. The new preferred stock is to be 5 per cent non-cumulative. After full dividends on the preferred, the common shall receive dividends of \$5 a share, after which both will share alike.

The amount of common stock issued will be 1,174,113

(c) future requirements are provided for by a mortgage of sufficient security to enable the sale of bonds thereunder at normal discounts and interest rates.

### Puget Sound Line

"The reorganization managers and all of the committees have concluded, after careful study and conference with Coverdale & Colpitts, that the equities of the situation require that all of the various issues of bonds secured under the refunding mortgage and the Puget Sound bonds outstanding in the hands of the public be treated alike in the allotment of new securities.

"None of the several issues of bonds which are secured directly or indirectly under the refunding mortgage have any other security and, although by their terms they bear different rates of interest and mature at different dates, the defaults which have occurred or will shortly occur, together with the sale of the railway company's property upon foreclosure of the refunding mortgage and under the general creditors' bill, will result in all of them being matured, and their rights to payment out of the proceeds of the mortgaged property will be identical.

"While the Puget Sound mortgage constitutes a first lien at the rate of approximately \$77,107 per mile on about 2,356 miles of the 10,126 miles of the system's owned main lines and to that extent ranks ahead of the refunding mortgage, the refunding mortgage participates in the lien of the Puget Sound mortgage through the pledge under the refunding mortgage of \$154,489,500, or more than 85 per cent of the \$181,664,500 of Puget Sound bonds now outstanding. The lines of railroad embraced in the Puget Sound mortgage, although of great strategic value, lie west of the Missouri River and serve a territory which, while capable of development, has not as yet produced a volume of traffic sufficient to give those lines a value, from the point of view of earnings, comparable to the value of the lines east of the Missouri. Upon the latter lines the refunding mortgage constitutes a lien, which is subject as to most of the mileage to underlying mortgages, but which is not shared by the Puget Sound mortgage."

### Lack of Earning Power

The announcement of the plan is very frank in its statements concerning the decreasing earning power of the St. Paul System in recent years. On this score it says:

The St. Paul System comprises more than 11,000 miles of railroad including mileage owned jointly with other companies or controlled through stock ownership and mileage leased or operated under trackage contracts. The lines east of the Missouri river radiate from Chicago and form a net-work in the states of Illinois, Wisconsin, Michigan, Minnesota, North and South Dakota, Iowa, Missouri and Indiana, serving a territory which is one of the richest and most fertile in the United States. The lines west of the Missouri river extend to Puget Sound and serve a vast territory which, although at present less productive than that to the east, is susceptible of unlimited growth as its population increases and its agricultural resources are developed.

The outstanding capitalization of the system as of June 1, 1925, aggregated \$702,864,396, which is at the rate of approximately \$63,000 per mile. Of this \$469,521,196, or about two-thirds, is in fixed interest bearing obligations and \$233,343,200, or about one-third, is in stock.

Since the termination of federal control in 1920 the system's earnings, even with inadequate depreciation charges, have not in any year except 1923 equalled total fixed charges, and for the year ended December 31, 1924, notwithstanding a policy of retrenchment, earnings fell short of total charges by over \$1,800,000.

This inability of the system to earn its fixed charges in recent years has been in large part due to the depressed conditions which have prevailed generally in the northwest. Settlement of the country has been retarded, farmers have emigrated or cut down their buying, and a large part of the territory served by the system, has, for the time being, failed to produce the volume of traffic necessary to support the system. Water competition via the Panama Canal has also had an especially adverse effect, an increasing volume of trans-continental traffic, attracted by low freight rates between the Atlantic and the Pacific, and also to the Far East, via the canal, having been diverted to water carriers. The railway company has also suffered from the large increases in wages, material costs and taxes which have not been offset by a commensurate increase in freight and passenger rates. Passenger earnings have fallen from \$31,034,000 in 1920 to \$21,768,000 in 1924, due largely to motor vehicle competition. The lack of adequate earnings has resulted in the system's equipment becoming both deteriorated in quality and insufficient in amount. In addition many of the shops on the eastern part of the system are not modern and therefore are not as efficient as they should be.

Attached to the plan submitted by the reorganization managers is the letter of Coverdale & Colpitts, consulting engineers, retained last January to make a thorough investigation of the operation condition of the Milwaukee, its capital requirements and earning possibilities. The report of the engineers is given here in part.

#### Report of Engineers

"For the purpose of presenting a view of the financial position of the system as a whole we have readjusted the income accounts for 1923 and 1924 to give effect to what we regard as more nearly adequate rates of depreciation of equipment, to include as joint facility rents, advances made to the Chicago Union Station for the purpose of paying bond interest under the agreement by which the railway company enjoys the use of the station and to treat the interest on the obligations of The Chicago, Terre Haute & Southeastern (whose properties are operated under lease) as an interest obligation of the system. Upon such a readjustment there would be shown as available for interest in 1923, \$18,816,000 against interest charges of \$20,950,000 or a deficit of \$2,134,000, and as available for interest in 1924, \$17,529,000 against interest charges of \$21,751,000 or a deficit of \$4,252,000.

#### Rail Renewals Inadequate

"We believe that the electrification of portions of the mountain lines has been justified by the resulting operating economies and recommend the electrification of additional sections in order to secure the full benefits of the work already done. Rail renewals for a number of years have been inadequate and some of the lines are somewhat deficient in ballast. In addition certain of the shop machinery and power stations on the eastern lines are to some extent obsolete, a considerable number of coaling stations should be replaced with mechanical plants and additional water treating plants should be provided. For the foregoing and other capital expenditures necessary to the normal anticipated development of the system, we believe that there should be adopted a program of additions and betterments to road for the next ten years, as follows:

1925	1926	1927	1928	1929
\$4,690,000	\$7,775,000	\$8,325,000	\$5,850,000	\$5,100,000
1930	1931	1932	1933	1934
\$10,300,000	\$9,600,000	\$6,600,000	\$7,100,000	\$7,600,000

"The equipment of the system is only in fair condition, a large number of units should be rebuilt and additional cars should be

purchased to overcome the deficiency in ownership, to replace retirements and to meet the estimated increase in traffic. In this connection it should be noted that in recent years an extensive rehabilitation plan has been conducted, as a result of which the freight equipment is in much better condition than formerly. This should be continued. Reserves for depreciation of equipment have been inadequate and we deem it advisable that the rates for such depreciation be increased and allowance therefor be made in all estimates of future earnings. In our judgment there should be adopted a program for new equipment and for additions and betterments to existing equipment for the next ten years, as follows:

1925	1926	1927	1928	1929
\$14,067,000	\$2,100,000	\$15,600,000	\$11,100,000	\$11,100,000
1930	1931	1932	1933	1934
\$11,100,000	\$9,300,000	\$9,300,000	\$9,300,000	\$9,300,000

or an average of \$7,294,000 per year.

"While this program contemplates total new capital expenditures averaging \$17,580,000 per year, for ten years, the new equipment can doubtless be financed under equipment trusts for 75 per cent of cost, leaving to be otherwise provided for—

Cash and deferred payments on new equipments trusts.....	\$4,165,000
Deferred payments on existing equipment trusts.....	2,662,000
Additions and betterments to equipment.....	1,700,000

Average per year for equipment.....	\$8,527,000
Additions and betterments to road.....	7,294,000

Average per year for road and equipment..... \$15,821,000

"The depreciation fund will, we estimate, provide for an annual average of \$7,590,000 of capital expenditures, so that about \$8,231,000 of the total annual expenditures contemplated by the program will be required to be financed by appropriations from surplus income or by the issue of new securities other than equipment obligations.

"We recommend that additional working capital of \$5,000,000 be provided to relieve the present deficiency of current assets over current liabilities.

#### Future Prospects Under Plan

"We have estimated that if the program which we recommend is pursued the amount of earnings available for interest, based upon normal business conditions (as an average over a period of years) will be \$17,650,000 in 1925, \$30,150,000 in 1930 and \$39,100,000 in 1934. Assuming that an average of only \$2,500,000 per annum is appropriated from surplus income for capital expenditures, the fixed charges of the new company under the plan, exclusive of interest on the new adjustment mortgage bonds, (figuring cost of new money at 5½ per cent per annum), would be for 1925 (including for that year interest on the government loans), \$12,200,000, for 1930 \$14,415,000, and for 1934 \$15,792,000. Should the estimated earnings be realized the amount of the available net income (as defined in the plan) for interest on the new adjustment mortgage bonds would be \$15,013,000 in 1931, \$16,962,000 in 1932, \$18,894,000 in 1933, and \$20,808,000 in 1934.

"Our study of the various underlying bond issues and the properties by which they are secured has convinced us that the value of such security, or, in the case of one or two of the smaller issues, the serious consequences which would flow from any other course, justifies leaving undisturbed the issues which are so treated by the plan. We also believe that the lease of the Chicago, Terre Haute & Southeastern property and the ownership of the Chicago, Milwaukee & Gary will be of such value to the new company that it should continue the present relation of the railway company to those properties and their securities. The relative values of the security for the Puget Sound bonds and for the bonds secured under the general and refunding mortgage we believe justifies treating the two issues on the same basis and every practical consideration makes it advisable that both these classes of bonds be given new securities under a single mortgage rather than that separate mortgages be made upon the separate parts of the system."



Standard Class III Tank Car Built by the Pennsylvania Car Company



# Both Trucks and Railways Needed

*Public demands both services in their economic spheres,  
decides Mid-West Transportation Conference*

THE motor bus is profitable only as a short haul and terminal carrier, and is not, therefore, essentially a competitor of the railways, according to railway and government officers who spoke at the Mid-West Motor Transport Conference in Chicago on May 27 and 28. The motor bus, it was held, is demanded also by the public and has its definite place in the nation's transportation scheme. The keynote of the conference was the plea that railways and motor vehicle operators co-operate so that the public interest will be best served, without unregulated and wasteful competition.

While the truck manufacturers were taken severely to task by several of the speakers for their "encouragement of unfair competition" with the railways, the spirit of the conference in general was to let bygones be bygones and to unite in the establishment of the most economical transportation system possible through the use of railways as long haul, or wholesale, carriers and motor trucks and buses as short haul and terminal or retail carriers. Officers of railways now engaged in some manner in motor truck operation described their experiences freely and added much information of value to the discussion. The meeting was largely attended by railway men who made up nearly half of the attendance of more than 300 at the sessions of the conference.

## Significant Resolutions Adopted

A resolution committee of 15 men including five representatives each of the public, the railroads and electric lines and the motor interests submitted the following resolutions which were approved at the closing session of the conference.

Adequate transportation facilities of all types are essential to the continued progress of economic, social and civic life. The

public interest will be best served through the co-operation of the rail, motor and water carriers rather than through unregulated and wasteful competition. The test of experience has demonstrated the wisdom of reasonable regulation of common carriers in the public interest. Unregulated operation of common carrier motors can only adversely affect the public right to uninterrupted, dependable and efficient transportation. It is unfair also to those agencies which are regulated and to the existing motor carrier operators themselves whose service to the public cannot be best maintained if it is subjected to a constant, wasteful attack from "fly-by-night" and financially irresponsible operators.

Regulation of the intrastate business of the common carrier motor should be vested in a state authority charged with the task of regulating the instrumentalities of transportation which the public requires. It should be so regulated as to secure the best service to the public. To insure continuity and reliability of service, sound financial organization should be shown also. Such state control over motor vehicle common carriers should be placed in existing commissions of the various states.

The state regulatory bodies having control over motor vehicle common carriers should be vested with the powers they exercise in controlling other forms of public utilities. Legislation should be enacted enabling steam railroads, trolleys, shipping companies and other public utilities to acquire, own and operate motor vehicles in conjunction with their regular lines of business, subject to state and interstate laws covering motor vehicle common carrier operation.

Congress should enact such legislation as would make possible public regulation of the common carrier motor vehicle engaged in interstate commerce.

This conference recommends that plans should be formulated for the creation of metropolitan traffic districts surrounding the principal manufacturing centers of the country and that traffic surveys, similar to that completed in the County of Cook, State of Illinois, be made in these various metropolitan districts; such surveys to cover all the areas which are tributary to large cities, or manufacturing districts.

In order to continue the relations established through the Mid-West Transportation Conference, a permanent committee should be created to be known as the Mid-West Transportation Council and consisting of equal representatives from each of the several agencies represented in this conference, together with representatives from the general public.

## M. L. Bell Calls Truck a Help

Marcus L. Bell, vice-president and general counsel of the Chicago, Rock Island & Pacific, while urging that motor truck transportation should be regulated, also stated that the railways can find relief through the motor truck from costly short haul operations. An abstract of Mr. Bell's address, which was read by W. F. Dickinson, general solicitor of the Rock Island, follows:

When we recognize that the number of motor cars in use has more than doubled in the last six years, and that possible road improvements in the country have scarcely begun, we are warranted in expecting that an increasing share of the country's traffic will be handled on the highways. The important thing for the railroad man to remember is that when an automobile owner, whether of a passenger car or a freight truck, engages in the business of transporting persons or property for hire from one place to another place, he is engaged in transportation; the same kind of transportation that the railroads are in. The wise thing to do is to recognize the change that the motor truck has brought about, and to utilize in rail transportation, so far as it is possible, the benefits and advantages which the motor truck offers. Of all branch lines where the mileage is less than the minimum prescribed by the railway wage schedule, the initial saving

from the use of the motor cars results from the reduction of the number of employees required. This was realized a long time ago, and, coupled with the other savings in maintenance and operating expenses, together with the possibility of more frequent, and, therefore, more convenient service, has pretty clearly indicated to the railroad man the necessity for the development of a rail car; and the new types of cars developed for this purpose undoubtedly will enable the railroads to save a great deal of money in their operating expenses.

But it is in the freight service that the larger possibility is offered. Just as the railroad man has nothing to gain by ignoring or combating this new element in the transportation field, so the truck owner is wasting time if he does not recognize his own limitations in freight transportation. It would seem to be the part of wisdom for both interests to regard the motor truck as a valuable auxiliary to railroad freight transportation rather than a dangerous competitor. From its very nature it cannot compete with the railroads on long-haul bulky traffic, and it is no more in the way of becoming a dangerous competitor of the rail carriers than is the waterway.

But, for the short-haul traffic and the convenient delivery, either of place or time, the motor truck can

offer the railroad carrier something that will relieve it of a very burdensome and increasingly expensive problem. I mean the terminal service. It is here that the motor truck rolls in, and assists the railroads, in offering the public a service which otherwise would be hampered and will be more and more hampered by congestion of terminal facilities.

There is also a very fine field for the motor truck in branch line operation. Instead of using mixed trains, loading an engine to half its rating, and paying the crew 100 miles for a 40-mile run, the motor truck, properly applied to branch line service, will enable the carriers to take up the slack between the capacity of the road and the actual traffic offered, and save that much money in transportation and maintenance expenses, to say nothing of the amount of capital invested.

#### Legal Aspects of Question

But it is with respect to the legal phases of this development that the situation is just now most interesting. When the motor truck owner engages in the business of transporting passengers or property, he becomes a common carrier, and, ipso facto, a public servant.

In the meantime, however, the common carrier by motor truck finds himself subject to regulation, and the railways are not awake to their own interests unless they recognize that the problem is of some concern to them. Certainly, whether we regard the automobile as a competitor or as a co-operator, it is to our interest to see that the people who engage in that business are subject to some supervision. Whether allies or competitors, we must have some regulation looking to their financial responsibility and some guarantee of a competent service. The situation resulting from the recent decisions of the Supreme Court in the "Buck" and "Bush" cases, holding that a state is without power to grant or withhold a certificate of convenience and necessity for the operation of a purely interstate highway carrier, is not a surprise to the railroad people, who have been familiar with this particular problem for many years; but it makes it probable that the next session of Congress will take some action relative to interstate highway transportation. The question for us to decide is, What kind of legislation do we want?

The question arises, Isn't it better to entrust some additional duties to the Interstate Commerce Commission than to create a new body for the purpose of highway transport regulation, whose views and duties and authority

and functions will perhaps conflict with those of the Interstate Commerce Commission, and possibly embarrass both the commission and the railroad by differences of opinion as to the extent and nature of its jurisdiction? I think it is better. Moreover, the railroads and the commission by this time are very well acquainted. They understand each other, and I believe they have confidence in each other. Therefore, it seems to me the federal regulation that is to come should be in the direction of a grant of power to the Interstate Commerce Commission.

There is every reason why these interstate motor routes, which, in spite of being interstate, are of small mileage and of local influence, should be governed and controlled in their activities by those familiar with local conditions. If the commission should be entrusted with the regulation of this transportation, it would seem that the logical and simple way to do it would be through the co-operation of the respective state commissions.

But any lawyer will urge that a delegated power cannot be further delegated. Of course, this is a valid objection if the legislation should be so framed as to authorize the delegation of a power entrusted to the commission; but it is suggested that an act could be drawn which would authorize the Interstate Commerce Commission to choose as its agents, for the execution of the entrusted powers, such agents as the commission might see fit; which, of course, would authorize the commission to perform its duties through the agents so chosen. The decisions when made, the authority when exercised, the power when granted, would be the decisions, the authority and the power of the Interstate Commerce Commission, not of the agents. Something might be worked out along these lines which would enable the Interstate Commerce Commission to control the question of interstate highway transport without too greatly increasing the burdens it now has to carry. If such a thought is carried out, the powers granted to the commission should be general, and not too specific. In other words, the commission should be strengthened by a grant of power, and not hampered by legislative instructions.

The railroads, sooner or later, will be faced with demands for participation in joint rates and through service; and, likewise, probably will develop ambitions for the extension of their own service through the use of motor trucks on the highways. Both of these will be very serious problems to the railroads, and it seems to me they would be better handled by the Interstate Commerce Commission by two or three separate bodies.

## Zone Station Called Solution of Terminal Problem

W. H. Lyford, vice-president and general counsel of the Chicago & Eastern Illinois, proposed the establishment of zone stations for the handling of freight in terminal cities and the use of store-door delivery, not by the railways, but by other agencies. Following is an abstract of Mr. Lyford's paper:

The terminal problem is difficult only at large cities. The solution of the terminal problem at Chicago is more difficult than it is at New York or St. Louis, and the principal obstacles to solution at Chicago grow out of the attitude of the railroad managers and of the large traders. Free trap car, lightering and tunnel services are a serious drain on railroad revenues, and constitute a glaring and unjust discrimination in favor of comparatively few traders and against the host of average traders. If the recipients of these free services were obliged to pay the actual cost of operating them, the services would be recognized as economic waste and would be supplanted by very much quicker and cheaper service by motor truck.

The principal advantages which would result from the use of zone stations in terminals might be tabulated as follows:

To the city: The reduction of street congestion, by moving railroad freight to and from each district of the city, in large motor truck units, fully loaded, thereby removing from the streets three times as many miscellaneous cartage vehicles; the removal from the downtown streets of the cartage of all railroad freight which does not originate in, or is not destined to that district; the ease of creating new industrial centers, by the location of additional zone stations.

To the railroads: Relief from necessity for expensive freight stations at their rail-heads, covered platforms, within two or three miles back of the rail-head, with a broad driveway on one side, and tracks on the other side, being all that would be required; the prompt unloading and reloading of cars at or back of the rail-head; the speeding up of transportation, by avoiding delays of



freight in the railroad terminals; the actual reduction of terminal expenses; the elasticity of the system which would enable the railroads to handle, currently, any increase of merchandise traffic, by the multiplication of the zone stations and trucks, without increasing the railroads' investment in their separate terminal facilities.

To the trader: The current hourly movement of his freight between all the railroad stations and the zone station nearest to his industry; the opportunity to receive and deliver, at one zone station, near his industry, all of his freight moving over any railroad, and the reduction of his cost of cartage which would result from such consolidation of loads and limitation of cartage distances.

The natural evolution of the establishment of zone stations in large cities, would be a general demand for store-door collection and delivery. The rail carrier should not undertake to furnish store-door delivery in the United States, but such service should be performed by an outside agency, and the cost of such service should be a separate charge upon the trader, in addition to tariff rates for rail transportation from station to station. Zone stations and the trucking operations should be controlled by one organization in each city, and such local organizations should be co-ordinated in one national organization. Collection and delivery of railroad freight must be a voluntary service, to be accepted or rejected by the traders. Impetus would be given to store-door service by providing, in large downtown industrial buildings, ample common facilities for the shipment and receipt of freight for all concerns which are occupants of the building.

The greatest possible economies in trucking railroad freight to and from the store-door cannot be attained without the use of zone stations. The railroads would welcome store-door delivery of all l.c.l. freight, by an outside organization, at the expense of the traders, as it would free their stations of storage freight awaiting delivery, and would enable them to pass through their stations an unlimited volume of freight, as is the case in Great Britain.

More regular and economical transportation of l.c.l. freight, express, and parcel post (exclusive of small and valuable packages, which ought to continue to be carried on passenger, mail or express trains), would result, in the United States as it does in Great Britain, from consolidating the railroad transportation of all three of these classes of traffic and moving them in the same cars, between the freight stations of the railroads, with prompt and adequate cartage service at each end of the line.

Even the seemingly overwhelming problem of distribution of cost of terminal operations has been solved in Great Britain, by establishing separate rates to cover line haul and terminal service, so that the terminal cost is paid only by the trader who enjoys the terminal service.

In discussing Mr. Lyford's paper, F. J. Scarr, supervisor of motor operations of the Pennsylvania, opposed the establishment of inland zone stations on account of the cost of the extra handling of freight routed through the stations. E. H. Lee, vice-president of the Chicago & Western Indiana, also doubted that the railways are in a position to operate off-track stations.

## Motor Truck Successful as Railroad Ally

G. C. Woodruff, assistant freight traffic manager of the New York Central, suggested the use of motor trucks as part of the railroad handling in the elimination of way freight to the larger terminal, and in trans-shipping freight from parallel branch lines across country to main line stations. He also pointed out that trucks are working satisfactorily in handling railroad freight to and from steamship piers. An abstract of Mr. Woodruff's paper follows:

During the past five or six years, there has come a gradual but nevertheless steadily increasing use of the motor trucks for handling a greatly diversified class of tonnage varying distances. There have been those who said, let the trucks take the short haul traffic, and we, the railroads, will handle the profitable long haul, heavy tonnage, but experience soon showed the fallacy of such reasoning for while the trucks in many cases did haul the short haul freight, they took only that part of it which was attractive, leaving the railroad burdened with the handling, often at a loss, of what was left. The experience of the motor trucks themselves, I think, quickly demonstrated that the so-called long haul traffic might well be left to the railroads. To those who may have looked upon the motor trucks as competitors, the natural thing might seem to be to follow the usual course in business practice of absorbing them or putting them out of business. To those who did not hold this viewpoint, such a course seemed both unnecessary and unwise, and experience has demonstrated the correctness of this latter view. The regarding of the motor truck as a friend and useful ally rather than an enemy and obnoxious competitor has, in the case of certain railroads at least, worked itself out to a not inconsiderable degree of success.

The handling of merchandise freight from and to the small stations on branch or main line by so-called way-

freight has been a never-ending source of thought with very little opportunity for improvement with the usual method of handling. Here the freight could not be allowed to drift away to a commercial trucking concern, for no trucking concern operated, and in addition with destinations oftentimes far distant, the railroad would ultimately have to handle the most of the mileage.

The thought came to handle by motor trucks, as a part of the railroad handling, for such part of the mileage as would make possible the elimination of the way-freight to the larger terminal. This has been tried out most successfully and from very small beginnings grown to major importance with satisfactory results from both service and operating cost standpoint.

On branch lines running nearly parallel to main lines and distant from 5 to 25 miles, under previous methods, the freight on the branch has been taken its whole length to the terminal. Now it is trucked across country to the main line larger station and there combined. Most of the larger cities are serviced by more than one railroad and are usually junction points for the interchange of freight originating on one railroad and destined to points on or via the second railroad. The connecting tracks generally made the interchange a matter of handling around the city on belt lines with many switch movements and much delay and expense. Now in the case of break bulk cars, l.c.l., it is possible and a matter of daily practice to truck direct from one terminal to the other, usually a matter of minutes rather than days. Here again the results from a service standpoint are self-evident and the expense in most cases is appreciably less.

There are undertakings to handle freight of all kinds by truck to and from steamship piers rather than to lighter as under the accepted practice.

Trucking from a larger concentration or transfer point to the smaller delivering stations is much more satisfac-

tory than to handle by the former train service. The handling by truck of unit containers for l.c.l. merchandise and c.l. coarse, or bulk, freight has been worked out to a very satisfactory degree and would have been impossible both as to inception and extension without the truck.

#### Need for Changed Attitude

Considered as allies, there must be certain things done or refrained from being done by the motor trucks, if they would bring the best results to the railroads and, in so doing, to themselves. There are many differences, for the motor truck is a free lance and can go and come at will, charge what it can get, and take or leave it as it may desire on a particular day.

The railroad on the contrary must do just the opposite, for its rates are fixed by tariff and must be published and cannot be changed at will; it must operate rain or shine, winter and summer; it must take all that it is offered for shipment. I cannot but feel firmly convinced that all those motor truck manufacturers or operators, who have the best interests of truck development at heart, will agree without reservation that the sooner such a situation is corrected by placing motor truck operation under some authority, be it state or interstate, or both, and there are placed upon such truck operation duties and obligations as common carriers fairly comparable to those under which the railroads function, it will be for the ultimate betterment of the truck industry, even though for a time the contrary may seem the case.

When the motor truck manufacturers can bring about a control of sales so that additional motor trucks will go only where there is real need for them rather than by encouragement of sales whether there are already more than enough to handle at fair rates the available business; when through a specialized and properly developed system of credit, a bona fide trucking concern having a railroad contract, may be assisted and encouraged to purchase the proper equipment so as to operate most efficiently and economically; when the matter of taxation and road costs are settled in a fair and equitable manner, as they must of necessity be settled, then the motor trucks as an ally of the railroads will assume a degree of importance many times greater than can be possible otherwise.

Discussing Mr. Woodruff's paper, C. W. Galloway, vice-president of the Baltimore & Ohio, said that the railway problem and duty in handling freight ends at the rail head and that others should distribute the freight for the rest of the way as is done in the case of passenger traffic. He also called attention to the corporate and political considerations which affect the delivery function. One railroad, he said, cannot go ahead with a proposal to abolish independent delivery trucking concerns on account of the financial interest in them which is held by shippers. Railroads should keep out of the truck business, Mr. Galloway said, since that is outside their province. Others should operate trucks under contract, he concluded.

[Other important papers presented at this conference will appear in an early issue of the *Railway Age*.]

## Plans of Pennsylvania Described

R. C. Morse, general superintendent transportation of the Northwestern region of the Pennsylvania, described the motor truck service of the Pennsylvania and disclosed its plans for the continued development of such service. Mr. Morse's paper read in part as follows:

The Pennsylvania has stated its intention to accomplish the co-ordination of rail and highway transportation in a practical way. With that basic idea as a foundation, certain definite plans were evolved and have been carried out with operating economies and service improvements. As related to the transportation of freight these plans are as follows:

The handling of short haul less than carload freight to and from approximately 500 stations on the Pennsylvania has been taken over by motor trucks operated under contract by local haulage companies. Motorization of terminals has been undertaken, involving the consolidation and distribution of freight within a terminal area for the purpose of creating certain operating economies and effecting an expedited service. Likewise door to door delivery is made, involving insofar as possible the direct collection and delivery of freight moving in both directions between the railhead and shipper or receiver.

A thorough mutual understanding of the following underlying principles can at least act as a guide for future efforts along parallel courses. The economics of each local problem determine the service to be rendered and the type of equipment to be used; the facility adopted should be confined within its proper sphere as dictated by efficiency and economy; the service rendered should be adequately supported; the motor vehicle is generally best suited to render service when small loads and short distances are involved; and the railroad generally is best adapted to render that service involving greater loads and longer distances.

The railroad, to render its service in bulk, must be

served by some means of collection and delivery. This indicates that what is generally accepted to be the greatest field of usefulness for the motor vehicle is in co-operative relations with existing modes of transportation.

Direct use of motor vehicles by railroads has an important place in the co-ordination of rail and highway transportation. However, its importance fades before the unlimited possibilities in the development of direct collection and delivery.

Direct collection and delivery means to the shippers and receivers the release of their vehicles from unprofitable service in congested streets and delays at crowded freight terminals; to the automotive industries, it means the utilization of many thousands of vehicles as compared to a few hundred in direct rail service; to the railroads, further relief of terminal congestion, and to the nation, the economic value of a unified transportation system.

The Pennsylvania is prepared to render such assistance as it can to bring about an organized system of direct collection and delivery along lines mutually acceptable. The following is suggested in connection with a door to door delivery: that it must be established gradually; that co-operative action by all railroads is both desirable and essential; that consideration is given investment and business standing of existing truck companies; that consideration be given investment in existing rail facilities; that service be optional; that the cost of this service be borne by the shippers and receivers; that the drayage charges be reasonable, but separate from and additional to existing rail rates.

Commenting on the papers that had been read, Ivan Bowen, a member of the Minnesota Railroad and Warehouse Commission, agreed that motor trucks may not be competitive with the railways, but pointed out that the railways must base their rates on the consideration that the trucks are competitive.



## General News Department

**L. E. Sheppard**, president of the Order of Railway Conductors, was re-elected to that office at the close of the convention in Minneapolis, Minn., on May 22.

The ice storage plant of the Denver & Rio Grande Western at Pueblo, Colo., was completely destroyed by fire on May 21 with a loss estimated at \$75,000.

**William G. Lee**, president of the Brotherhood of Railroad Trainmen for the past 16 years, was re-elected to that office at the close of the triennial convention in Cleveland, Ohio, on June 2. The other officers were also re-elected.

Seven persons, five passengers and two trainmen, were killed when the Sunshine Special of the International-Great Northern, northbound, was derailed near Longview, Tex., on May 28, according to press despatches of that date. The locomotive and three coaches left the rails at a curve and tumbled over an embankment. All the passengers who were killed were in the negro coach next to the locomotive.

The Quana, Acme & Pacific has established a group insurance policy for the benefit of its employees, the policy being placed with the Metropolitan Life Insurance Company. The plan is co-operative, employer and employees acting together in the payment of the premiums. The policy has been accepted by 125 employees who will have \$1,000 life insurance protection each, and a similar amount under the accidental death and dismemberment contract. Officers of the road are insured under a special arrangement.

**Paul Henderson**, second assistant postmaster general, in charge of the railway mail service and the air mail service, has resigned, effective on August 1, to become general manager of the National Air Transport, Incorporated, a new corporation which plans to carry on regular airplane transportation between New York and Chicago. W. Irving Glover, who has been third assistant postmaster general, has been promoted to take the position made vacant by Mr. Henderson's resignation.

**Frederic Schaefer**, of the Schaefer Equipment Company, Pittsburgh, Pa., C. M. Taylor, superintendent of the Rearing's creosoting plant at Port Reading, N. J., and P. R. Albright, vice-president and general manager of the Atlantic Coast Line, will attend the International Railway Congress in London this month. Mr. Albright will serve as a delegate for the American Railway Association. The publication of these names, with those which appeared in the *Railway Age* of May 16 and May 23, brings the total of the delegation from this continent to 58.

### Net Railway Operating Income

#### Shows Increase in April

The net railway operating income of Class I roads in April was \$66,199,236, an increase of \$3,900,709 over last April. Net for the first four months of the year represents an annual rate of return of 4.38 per cent on property investment, as compared with 4.45 per cent for the same period last year.

### Cost of Fuel

Class I railways in March consumed 8,149,802 tons of coal as fuel for road locomotives in freight and passenger train service charged to operating expenses, as compared with 9,047,802 tons in March last year; at an average cost of \$2.82 a ton as compared with \$3.24 last year, according to the Interstate Commerce Commission's monthly statement. The total cost was \$23,008,110, as compared with \$29,343,077 last March. The cost per ton ranged from \$1.88 in the Pocahontas region to \$4.79 in the New England region. The roads also consumed 169,236,412 gallons of fuel oil,

at 3.21 cents per gallon, as compared with 179,290,228 gallons at 2.77 cents in March, 1924. For three months this year the cost of coal was \$71,427,433, as against \$89,198,992 last year and the total cost of coal and fuel oil was \$87,104,196, as compared with \$103,210,430 last year.

### Rock Island Athletics October 12

The second annual athletic tournament of the Chicago, Rock Island & Pacific will be held in Kansas City, Mo., on October 12. The tournament will consist of 37 events participated in by employees of the road representing 14 states. Through the courtesy of the public school authorities, arrangements have been made for the use of the school gymnasium and athletic field in Kansas City. The Kansas City Athletic Club has given the use of its pool for the swimming events.

### Many Prospective Settlers for Northwest

The number of inquiries from possible settlers, received by the Northern Pacific since the beginning of this year, is over nineteen thousand, a number which the passenger department believes must indicate a decided increase in interest in the northwestern states as compared with former years. This remarkable response is believed to be largely the result of the advertising which has been done by various interests during the past three years. These thousands of requests have been responded to personally, and in a great number of cases a representative of the road has made a visit to the prospect. The Northern Pacific is adding two men to its force of immigration agents, Lewis Campbell and L. E. Lowe.

### B. of L. F. & E. Opens Convention

The thirtieth convention of the Brotherhood of Locomotive Firemen & Enginemen opened at Detroit, Mich., on June 1 with an attendance of over 1,000 delegates representing enginemen in all parts of the United States and Canada. Two topics which are expected to be discussed at the sessions of the convention are the proposal to discontinue secret sessions of the brotherhood and the suggestion to make Cleveland, Ohio, the permanent convention city for the brotherhood and to establish a home for the organization in that city.

D. B. Robertson, president of the brotherhood, is reported in his opening address to have attacked the railroads for what he termed their attempts to weaken the brotherhoods by means of group insurance policies and the encouragement of athletics among their employees independent of union supervision. Mr. Robertson termed these activities an effort to wean railway employees away from the brotherhoods. Mr. Robertson is also said to have attacked the Railway Labor Board and to have described the support which the brotherhood is giving to the Howell-Barkley bill to substitute another board for the arbitration of railway labor disputes. The convention will continue for several weeks.

### Location of Grain Cars

L. M. Betts, manager of the closed-car section of the Car Service Division of the American Railway Association has sent a letter to all members of the several Regional Advisory Boards, giving data as of May 15 concerning box car distribution between different sections of the country, with special reference to the location of western cars in anticipation of the seasonal heavy movement of grain.

The grain movement begins in the southwest about July 1 and the railroads are building up the supply of box cars particularly system cars in grain loading territory. The letter contains a statement showing a very satisfactory location of cars as between different sections of the country, both as to total number of box cars available and the number of system cars on home roads. In

spite of total car loadings to date exceeding all previous figures for these months, says Mr. Betts, the western lines today have in their possession nearly the full number of cars owned and a larger ratio of system cars on home lines than ever before on record, even in comparison with periods of business inactivity.

The statement shows box cars on western roads equal to 95.0 percentage of ownership, compared with 92.1 percent a year ago, an increase of 12,034 cars on line. Out of every thousand cars owned by western roads 677 are on home lines, compared with 628 a year ago, and 393 of the same date in 1923. Eastern and Southern roads had 16,966 or 21.5 percent fewer western box cars in their possession as of May 1 than as of the same date last year.

Box car surplus on western lines for the second week of May averaged 83,307 cars per day, compared with 66,546 cars per day for the same period last year. Box cars assembled for grain loading on sixteen of the principal western roads totaled as of May 15, 23,302, as compared with 22,444 as of the same date last year.

The car distribution a year ago at this time was considered remarkably favorable, and as a direct result one of the largest grain movements in history was handled without car shortage of the slightest consequence at any point. This year, in spite of somewhat heavier business being handled, the location of cars shows a considerable improvement over last year.

### Canada Acts to End False Billing of Liquor Shipped to U. S.

George P. Graham, Minister of Railways and Canals, introduced in the House of Commons at Ottawa last week a measure to amend the Railway Act of 1919 to provide drastic treatment for those found guilty of false billing of freight in railway cars. In explaining the bill Mr. Graham said: "The difficulty which has arisen, particularly during the last two or three years, has grown to such proportions that the customs authorities of the United States have practically notified the Canadian railway companies that unless they take drastic steps to prevent false billing it will become necessary to examine every freight car that crosses the border to ascertain whether it contains the goods specified in the bills. Occasionally we read of certain freight cars from Canada being found in Buffalo and elsewhere on the other side of the line containing liquor concealed with a certain quantity of the goods which the car is supposed to contain; but recently a car came from the United States to a certain city in Canada loaded with clay, and by a peculiar coincidence this car was lined up beside another car, a certain amount of the clay was taken out and the space filled with intoxicating liquor, the car then being returned to the point in the States from which it first came. It is a serious matter to the legitimate trade of Canada that it should be threatened with interference merely because some people wishing to violate the law, indulge in false billing."

Then Arthur Meighen, Conservative leader in the House, objected to the form of the amending bill and urged that it be brought in in the form of an amendment to the Criminal Code.

The House in Committee dealing with this measure reported progress and in the meantime the Minister will consult with the Justice Department as to changing the form of the proposed amendment.

Another bill introduced by Mr. Graham provided for a change in the measure dealing with the construction of the \$30,000,000 viaduct in Toronto, which change will extend the borrowing power of the Canadian Pacific Railway, one of the parties to that project.

### Traffic in Canada Declines

Canadian National freight traffic for March, 1925, was lighter by 6.8 per cent than that for March, 1924, and freight revenues fell off \$1,714,561, or 13.3 per cent. Passenger traffic was lighter by 14.3 per cent and passenger receipts were less by \$306,145, or 11.8 per cent. Total revenues showed a reduction of \$1,889,060, or 11 per cent. Maintenance of way and structures showed a slight increase, and traffic expenses also were heavier by \$80,217, or 19.2 per cent, but other items of expense were cut, reducing the total by \$1,448,957, or 9.2 per cent, which increased the operating ratio from 91.86 in March, 1924, to 93.73, and reduced the net operating revenues by \$440,103. The total payroll showed a reduction of \$515,469, or 5 per cent, for a decrease in the average number of employees of 4,523. Freight trains carried 25.6 more revenue tons per train-mile, but the average receipts per ton-mile

were 0.935 cents, as against 1.004 cents last year, which reduced the earnings per train-mile by 11 cents. The entire system, including the lines in the United States, showed a decrease in the net operating revenues of \$657,343 for March, and a decrease of \$35,192 for the three months of January, February and March, 1925.

Canadian Pacific gross revenues were 12.3 per cent, or \$1,780,246 lower in March this year than in March, 1924, with a reduction of 12.7 per cent in freight traffic and in passenger traffic of 13.6 per cent. Operating expenses were cut in every department, maintenance of way and structures being reduced by \$400,825, or 22.4 per cent; maintenance of equipment by \$507,579, or 14.9 per cent; traffic by \$28,700, or 4.3 per cent; transportation by \$515,077, or 8.8 per cent, and the total by \$1,482,163, or 12.2 per cent. The net operating revenues were reduced \$298,082, and the operating ratio was increased slightly, 83.95 to 84.04 per cent. The reduction in the payroll was \$290,333 for a reduction in the average number of employees of 2,554. For the first three months of the year gross revenues were below those of last year by \$4,405,465, expenses were less by \$4,079,652, and net revenues were less by \$325,813.

Total operating revenues of the Canadian Pacific for March this year were \$12,746,482, as compared with \$14,526,728 in March last year; total operating expenses were \$10,712,493, as compared with \$12,194,656; and operating income \$2,117,212, as compared with \$2,510,798.

### Charges C. N. R. Not Using Transcontinental Enough

Unfair treatment of the National Transcontinental, that section of the Canadian National which connects the old Intercolonial with the Grand Trunk Pacific and which traverses Northern Quebec and New Brunswick, was charged in the Canadian House of Commons last week by Thomas W. Caldwell, a Progressive member from New Brunswick, in the warm debate on the proposal of the Federal government to advance a further \$5,000,000, by way of a loan, for improvements to the harbor at Quebec City. "I am one of those who believe the harbor of Quebec should be developed; but there is a consideration that comes before further development of Quebec harbor, and that is that the present harbor facilities shall be used to its full capacity. In this respect, I feel that an injustice is being done, not only to the port of Quebec, but to the Transcontinental Railway and to the ports of Halifax and St. John. When the Transcontinental Railway was built, we were told that it was built for the express purpose of furnishing a short direct route to the eastern seaboard, a route with the best grades of any road in Canada, and this was done at an enormous expense to this country. Traffic has not gone over that road in the volume it should. For instance, the port of Quebec is nearer to Winnipeg by rail than is the port of Montreal. I think I am well within the facts in stating that. Moreover, the port of St. John is nearer Winnipeg by rail, using the Transcontinental Railway, than the port of Portland is to Winnipeg via Montreal. This has been a sore point with us in the Maritime provinces—for, I was going to say, generations; at least, ever since the Transcontinental was built. If the government will guarantee that traffic will go over the Transcontinental in the shape of grain, cattle and other products coming from the west to the east, and products that the west needs going westward, we shall have no hesitation in assisting the minister in developing the port of Quebec. But until this is done, I feel quite reluctant to support this resolution or a bill based upon it.

"The point is that Quebec has not been given the traffic it can handle at the present time. We have over-built our railways, we have over-developed our ports in some directions, and we have carried to a port in the United States a large quantity of traffic that should go through Canadian ports. This has been done because eastbound traffic from the west has largely centred at Montreal. Then when water navigation closes to Montreal in the fall, we have an immense stock of grain and other products that must go overseas. It is a long haul from Montreal to Halifax or St. John as compared with the haul to Portland. If more of this traffic were centred at Quebec,—there will be plenty of traffic for Montreal, too—then when navigation closed, this surplus tonnage stored in the elevators at Quebec would go east to the Maritime seaboard, would furnish traffic for our Transcontinental railway to those ports in the east and would, I think, help to reduce the deficit on the Canadian National Railways. But, as I said, just as long as the whole traffic is headed for Montreal, we



in the Maritime provinces have no hope of developing our ports and of getting the traffic that we feel we are entitled to and that we were promised at the time of confederation."

### Exhibit of International Railway

#### Supply Men's Association at Chicago

Forty-nine members were represented in the exhibit of the International Railway Supply Men's Association which was held at the Hotel Sherman, Chicago, May 26, 27, 28 and 29, 1925, in connection with the convention of the International Railway Fuel Association. A large proportion of the exhibits covered locomotive appliances.

The list of companies exhibiting, with the nature of the exhibit and the names of their representatives, are as follows:

- American Arch Company, New York.—Represented by J. T. Anthony, A. W. Clokey, Edwin H. Cook, R. J. Himmelright, Thos. Mahar, J. P. Neff, W. E. Salisbury and A. M. Sucece.
- American Bolt Corporation, Chicago.—Bolts, nuts, rivets, lock nuts, turnbuckles and lag screws. Represented by J. W. Fogg and T. W. Callahan.
- American Locomotive Company, New York.—Model of three-cylinder locomotive and Alco power reverse gear. Represented by G. P. Robinson, C. O. Rogers, Geo. Weiler, A. Haller and R. Brown.
- American Railway Appliances Company, New York.—Flue blower. Represented by Lloyd D. Brown and J. Wallace Henry.
- Badeker Manufacturing Company, Chicago.—Metallic packing, hub liner and bell ringer. Represented by J. P. McKinley and J. W. Stack.
- Barco Manufacturing Company, Chicago.—Metal air, water, steam and oil connections, flexible joints, balanced lubricated plug valves, metallic car steam heat connections, reverse gears and smokebox blower fittings. Represented by F. N. Bard, C. L. Mellor, F. H. Stiles, A. S. Lewis, L. E. Livingston, F. B. Nugent and C. O. Jenista.
- Bird-Archer Company, New York.—Represented by J. L. Callahan, J. J. Clifford, J. A. McFarland and C. J. McGurn.
- Cleveland Pneumatic Tool Company, Cleveland, Ohio.—Pressure seated air valves, Bowes air hose couplings, ball bearing air drills and riveters and chipping hammers. Represented by C. J. Albert and B. H. Tripp.
- Dearborn Chemical Company, Chicago.—Methods for treating boiler feedwater and anti-rust treatment. Represented by J. D. Purcell, C. S. Murray, James Roddy, Nelson F. Dunn, H. P. Ross, Harry Rehmyer, I. Bowen, L. P. Bowen, William Gemlo and C. M. Hoffman.
- Detroit Lubricator Company, Detroit, Mich.—Flange oiler and hydrostatic locomotive lubricators. Represented by S. A. Witt and C. L. Butler.
- Duff Manufacturing Company, Pittsburgh, Pa.—Lifting jacks for cars and locomotives. Represented by C. N. Thulin and E. E. Thulin.
- Edna Brass Manufacturing Company, Cincinnati, Ohio.—Lubricators, injectors, boiler checks, coal sprinklers, oil burners and mechanical lubricator. Represented by E. O. Corey, F. S. Wilcoxon and H. A. Glenn.
- Electric Service Supplies Company, Philadelphia, Pa.—Headlights and turbo generators. Represented by J. C. Bryan and B. D. Barger.
- Franklin Railway Supply Company, New York.—Literature. Represented by C. W. F. Coffin, J. L. Randolph, W. T. Lane, J. L. Bacon, Paul Willis, Paul Weiler, H. S. Seifried, J. A. Talty, T. P. Whelan, F. H. Cunningham, J. A. Berger, C. H. Godfrey and A. L. Meston.
- Galena-Signal Oil Company, Franklin, Pa.—Represented by W. F. Walsh, R. A. Greene, F. C. Langdon, J. A. McNulty and W. P. Baker.
- Garratt-Callahan Company, San Francisco, Cal.—Boiler preservative. Represented by J. G. Barclay, A. H. Hawkinson and W. F. Caspers.
- Hanna Stoker Company, Cincinnati, Ohio.—Stoker. Represented by G. D. Peverall.
- Hulson Grate Company, Keokuk, Iowa.—Locomotive grate. Represented by A. W. Hulson, J. W. Hulson, J. E. Vrooman, and C. E. Stranathan.
- Hunt-Spiller Manufacturing Corporation, South Boston, Mass.—Cylinder bushings, cylinder packing rings, crosshead shoes, valve bushing, piston heads and bull rings, and valve packing. Represented by V. W. Ellet, E. J. Fuller and C. L. Galloway.
- Huron Manufacturing Company, Detroit, Mich.—Wash-out and arch tube plugs. Represented by E. H. Willard, M. T. Willard and H. N. Reynolds.
- International Correspondence School, Railroad Department, Scranton, Pa.—Registration booth. Represented by Ed M. Sawyer and H. T. Pottenger.
- Iron Fireman Corporation, Omaha, Neb.—Automatic coal burner. Represented by A. O. Dady.
- Lima Locomotive Works, Inc., New York.—Photographs. Represented by G. M. Basford and N. K. Tate.
- Locomotive Firebox Company, Chicago.—Nicholson thermic syphon. Represented by James E. Barber, C. A. Seley and C. M. Rogers.
- Locomotive Stoker Company, Pittsburgh, Pa.—One-third size model of stoker, slope sheet coal pusher, pictures and matter descriptive of Elvin shovel type stokers. Represented by J. J. Hannahan, W. G. Clark, A. N. Willis, E. F. Milbank, J. J. Byrne, H. C. Woodbridge, R. G. Kelley, E. Prouty, A. L. Wipple, Carl Stoller, J. B. Ball, T. W. Baldwin, E. R. Funk, E. G. Haskins, C. D. Jones, Edw. Ryan, W. T. Capps, H. C. Huston, H. D. Eckerson, J. B. Davis, T. L. Capps, V. B. Emrick and H. Cale.
- Manning, Maxwell & Moore, Inc., New York.—Hancock inspirators and valves, Consolidated safety valves, Ashcroft gages, etc. Represented by C. L. Brown, J. H. Bush, J. P. Walsh and C. W. Corning.
- Marshall, W. A., New York.—Coal. Represented by C. N. Claar and J. D. Kline.
- Nathan Manufacturing Company, New York.—Mechanical lubricators, hydrostatic lubricators, lifting and non-lifting injectors, water columns, low water alarm boiler checks, feedwater heater check, whistles and valves, feedwater line connection and injector starting valve. Represented by R. Welsh, W. Walsh, F. C. Davern, G. Hatz and T. J. Murphy.

- National Railway Devices Company, Chicago.—Shoemaker fire doors. Represented by Jay G. Robinson and E. J. Gunnison.
- Norton, A. O., Inc., Boston, Mass.—Fifty-ton inverted speed control self-lowering jack and 25-ton and 30-ton journal jacks. Represented by R. J. McKay, E. W. Hanegan and C. H. Smith, Jr.
- Ohio Injector Company, Chicago.—Injectors, lubricators, flange oilers, drifting valves and low water alarms. Represented by W. S. Furry, F. W. Edwards, A. C. Beckwith, F. B. Farnsworth, W. H. Malone, N. M. Barker and C. G. Sauerberg.
- Okadee Company, Chicago.—Locomotive front end hinge, blow-off valve, automatic cylinder cock, tender hose coupler and water glass protector. Represented by A. G. Hollingshead, G. S. Turner, Chas. R. Long, Jr., F. G. Zimmerman, W. H. Heckman, J. S. Lemly and F. J. Kearney.
- Peabody Coal Company, Chicago.—Coal mine model, and photo-scope with moving picture films. Represented by J. T. Mickes and W. Royce.
- Pilliod Company, New York.—Locomotive valve gear. Represented by J. H. Cooper, Frank Fisher and W. H. Bellmaine.
- Pilot Packing Company, Chicago.—Packings. Represented by Robert Sinkler and W. W. Bacon.
- Pyle-National Company, Chicago.—Locomotive headlights, turbo generators, floodlights and locomotive valve gear. Represented by Wm. Miller, Wm. Bretherton, R. L. Kilker, R. S. Parsons, Walter Smith, T. P. McGinnis and Walter Haas.
- Railway Journal, Chicago.—Copies of publication. Represented by S. Rosenthal and J. A. Williams.
- Railway Review, Chicago.—Copies of publication. Represented by C. H. Gertner.
- Simmons-Boardman Publishing Company, New York.—Copies of *Railway Age* and *Railway Mechanical Engineer*. Represented by H. M. Brewer and C. B. Peck.
- Standard Stoker Company, Inc., New York.—Model of locomotive stoker in operation. Photographs, bulletins and general arrangement drawings. Represented by F. P. Roesch, C. H. Quinn, H. S. Mann, W. E. Durkee, F. C. Pickard, George J. Roesch, Jr., C. F. Hansen, Herman Zahn and E. T. Schroeder.
- Steam Coal Buyer, St. Louis, Mo.—Copies of publication and bulletin announcements on fuel economy contest. Represented by Arthur M. Hull and John A. Harris.
- Superheater Company, New York.—Exhaust steam injector, boiler feed pump and model of feedwater heater. Represented by R. M. Ostermann, G. E. Ryder, H. B. Oatley, C. H. True, N. T. McKee, B. Browne, C. R. Fairchild, E. A. Averill, E. J. Drewyur, K. E. Stillwell, R. R. Porterfield, W. A. Buckbee, L. H. A. Weaver, Geo. Fogg, I. D. Toner and R. J. Van Meter.
- Transportation Devices Corporation, Indianapolis, Ind.—Automatic cut-off control. Represented by E. S. Pearce, W. R. Beck and F. H. Lutz.
- Ulster Iron Works, Chicago.—Hollow drilled Staybolts and samples of engine bolt iron. Represented by H. A. Gray, J. C. Campbell and N. S. Thulin.
- United States Bureau of Mines, Pittsburgh, Pa.—Self-contained oxygen breathing apparatus, two-hour and half-hour types; all-service masks; enginemens' and firemen's respirators; flame safety lamps and electrical safety lamps; detectors of carbon monoxide in the air and blood; oxygen inhalators used in conjunction with artificial respiration; pictures depicting Bureau of Mines work; hose mask; manikins showing first-aid dressings; publications of Bureau of Mines, and general first-aid cabinets as advocated by the Bureau. Represented by Wm. W. Hunter.
- Vissering, Harry & Co., Chicago.—Piston rod and valve stem packing, air pump packing, grease lubricator for piston rod and valve stems, sanding equipment, packing boring machine and Bell ringer. Represented by G. S. Turner, A. G. Hollingshead, W. H. Heckman, F. J. Kearney, Chas. R. Long, Jr., J. S. Lemley and F. G. Zimmerman.
- Worthington Pump & Machinery Corporation, New York.—Sectionalized heater, installation photograph album, moving card display cabinet. Represented by D. R. Coleman, T. C. McBride, J. M. Lammedee, J. E. Buckingham, S. N. Morse, Geo. Lambert, E. C. Jackson, G. R. Mulqueeny, Wm. Christiansen, Geo. Schumacker, Frank Homan, R. E. Travis, W. W. Hoit, C. E. Berglund, D. W. Dimmock and W. G. Clarke.
- Wyoming Shovel Works, Wyoming, Pa.—Locomotive scoops. Represented by Stanley H. Smith and C. S. Jordan.

### Railway Expenditures in 1924

Expenditures made by Class I railroads in 1924 for wages, materials and supplies and for improvements totaled \$4,847,700,000, according to reports compiled by the Bureau of Railway Economics. The principal expenditures were divided as follows:

Wages paid for maintenance and operation.....	\$2,629,902,000
Materials purchased, including fuel.....	1,343,055,000
Capital expenditures (including new equipment and improvements) .....	874,743,000
<b>Total .....</b>	<b>\$4,847,700,000</b>

This amount, however, does not include approximately \$340,000,000 paid in taxes, or an average of \$929,000 daily compared with a daily average of \$909,000 in 1923. It also does not include \$510,000,000 paid out in interest charges or \$310,000,000 paid out in dividends.

The total principal expenditures of the railroads in 1924 showed a decrease of \$735,400,000 as compared with 1923.

Expenditures for fuel, materials and supplies represented a decrease of \$395,648,000 or 23 per cent as compared with 1923. This resulted in part from the fact that the railroads purchased less materials due to the somewhat smaller programs for maintenance and additions and betterments and partly from the fact that stocks in storage were drawn on quite heavily during the year. At the same time greater efficiency in operation played no small part in reducing the consumption of train and engine supplies. Decline in the unit cost of bituminous coal also had the effect of reducing the amount of expenditures.

Fuel in 1924 cost the railroads \$471,656,000, a decrease of nearly 24 per cent as compared with the year before; due to a reduction in the quantity purchased and to a decrease of 6 per cent in the volume of freight traffic. Bituminous coal alone cost the railroads \$373,483,000 in 1924, a total of 126,372,000 net tons having been purchased, compared with \$519,007,000 which was paid for 154,902,000 tons in 1923. Thus, while 18 per cent less tons were purchased during 1924 than during the year before, the total outlay was 28 per cent less. The outlay for anthracite coal in 1924 was \$14,497,000 or 20 per cent less than in 1923, while only about 7 per cent fewer tons were purchased. Class I railroads in 1924 purchased approximately 26 per cent of the total bituminous coal production of the United States and 5.2 per cent of the anthracite production.

The railroads in 1924 expended \$180,872,000 for forest products, a reduction of 22 per cent under the year before. Of that amount, \$111,442,000 was spent for cross ties, 11 per cent less than in 1923, while 14 per cent fewer ties were purchased during the past year than during the year before.

More than 27 per cent of the total steel production of the United States was bought directly by the railroads or for them through car and locomotive builders. Direct expenditures for iron and steel products amounted to \$365,610,000, or 21 per cent less than in 1923.

Approximately 2,210,800 barrels of cement were bought directly by the railroads during the past year, 8.5 per cent less than the year before. The total purchase price in 1924 was \$5,141,000 or 16 per cent less than 1923. This does not include, however, direct purchases made by contractors engaged in railway construction work.

Approximately 14,265,000 cubic yards of ballast were bought in 1924 at a cost of \$12,608,000.

Lubricating oil and grease cost \$13,158,000 during the past year, a decrease of \$2,520,000 compared with the year before, while for brass, copper, zinc and various other non-ferrous metal products needed in railway operation, the railroads spent \$39,049,000, or 32 per cent less than was spent on the same account in 1923.

### Air Brake Appliance Association

#### Exhibit at Los Angeles

A total of 24 companies, members of the Air Brake Appliance Association, were represented by exhibits at the Hotel Alexandria, Los Angeles, Cal., during the convention of the Air Brake Association which was held May 26, 27, 28 and 29, 1925. At the annual meeting of the exhibiting organization held during the convention, the following officers were elected to serve during the coming year: John B. Wright (Westinghouse Air Brake Company), president; Fred Speer (Gustin-Bacon Manufacturing Company), secretary-treasurer; H. I. Wrigley (Universal Draft Gear Attachment Company), Fred S. Wilcoxon (Edna Brass Manufacturing Company), and J. H. Ainsworth (A. M. Byers Company), members of the Executive Committee.

The list of exhibitors is as follows:

Ashton Valve Company, Boston, Mass.—Safety valve, air and steam gages, dead-weight tester, three-speed recording gage, back pressure gage and piston swab. Represented by J. F. Gettrust.  
American Brake Shoe & Foundry Company, New York.—Brake shoes. Represented by A. L. Clark.  
Barco Manufacturing Company, Chicago.—Engine and tender connection, lubricated plug cock, smokebox blower fitting and flexible joints. Represented by Wm. J. Behlke.  
Buffalo Brake Beam Company, New York.—Auxiliary brake beam support, adjusting carrier and guard, self-locking brake pin, self-locking shoe key, and pin locks. Represented by C. R. Busch.  
Byers, A. M., Company, Pittsburgh, Pa.—Wrought iron pipe, samples of bent pipe, etc. Represented by J. H. Ainsworth and Chas. Grosse.  
Chicago Railway Equipment Company, Chicago.—Third point support and safety guard for brake beams and brake beam safety guard. Represented by E. G. Busse.

Crane Company, Chicago.—Special air-tested railroad fittings for air brake installations. Represented by Fred W. Venton, F. L. Manchester and J. Flindall.  
Dearborn Chemical Company, Chicago.—No-ox-id and feedwater boiler compound. Represented by A. W. Cooley, A. B. Burns and Bert Smock.  
Dixon, Joseph, Crucible Company, Jersey City, N. J.—Brake cylinder lubricant, triple valve graphite, spring oil, silica graphite paint, cup grease, gear lubricants, engine front finish, crucibles, pipe joint compound and flake graphite. Represented by Chas. T. Mathews.  
Enda Brass Company, Cincinnati, Ohio.—Forced feed lubrication device, water columns, and steam specialties—injectors, lubricators, etc. Represented by Earl E. Snyder and C. B. Randall.  
Foster, Walter H., Co., New York.—Literature. Represented by Carl O. Glenn.  
Galena-Signal Oil Company, New York.—Lubricating oils and greases. Represented by E. V. Sedgewick, Harry H. Hale, Frank H. Wright and R. J. McQuade.  
Gustin-Bacon Manufacturing Company, Kansas City, Mo.—Air brake equipment gaskets, air brake hose couplings, air pump strainer and throttle stuffing box. Represented by Fred Speer and Fred C. Fuller.  
Johns-Manville, Inc., New York.—Packing, etc. Represented by Walter J. Hennessy.  
Micro Machine Company, Bettendorf, Iowa.—Railroad internal grinders. Represented by Herbert H. Moor.  
New York Air Brake Company, New York.—Piston rod assembly, centrifugal pump strainer and atomizing air pump lubricator. Represented by Frank Wentworth, Thomas O'Leary, B. Hyanes, J. Yohn, George Gleifges and J. C. Elliot.  
Paxton-Mitchell Company, Omaha, Neb.—Air pump packing and piston rod packing. Represented by J. J. Keliher.  
Pilot Packing Company, Chicago.—Air pump packing, etc. Represented by Joseph Sinkler and Mrs. E. F. Boyle.  
Sheafe Engineering Company, Inc., Chicago.—Air hose couplings and lip gaskets. Represented by J. S. Sheafe.  
Simmons-Boardman Publication Company, New York.—Copies of *Railway Age* and *Railway Mechanical Engineer*. Represented by E. L. Woodward and Homer Beach.  
Smith-Fageol Company, Los Angeles, Cal., and Fageol Motors Company, Oakland, Cal.—Air brake equipment (Westinghouse metal to metal) for motor cars and Fageol safety coach. Represented by R. C. Smith.  
Universal Draft Gear Attachment Company, Chicago.—Hand brake booster and ratchet lever brakes. Represented by C. J. Nash, H. R. Wrigley and P. E. Camp.  
Westinghouse Air Brake Company, Wilmerding, Pa.—Air brake equipment. Represented by J. B. Wright, V. Vilette, H. S. Clark, J. A. Siegrist, C. D. Stuart, A. C. Layton, J. S. Siegrist, T. G. Miles, H. Robinson, H. A. Crocker, W. K. Whittlesey, Mr. Yansey, H. L. McClintock, L. E. Fuller, John Hume, A. B. Brown, L. M. Carlton and J. C. McCune.  
Worthington Pump & Machinery Corporation, New York.—Locomotive boiler feed pump and feedwater heater. Represented by R. H. Ramey, A. D. Ahern, C. W. Hammond, G. P. Jennings and C. S. Wentworth.

### Meetings and Conventions

The following list gives names of secretaries, dates of next or regular meetings and places of meetings.

AIR BRAKE ASSOCIATION.—F. M. Nellis, 165 Broadway, New York City. Exhibit by Air Brake Appliance Association.  
AIR BRAKE APPLIANCE ASSOCIATION.—John B. Wright, Westinghouse Air Brake Co. Meeting with Air Brake Association.  
AMERICAN ASSOCIATION OF ENGINEERS.—C. E. Drayer, 63 E. Adams St., Chicago. Next convention, 1925, Orlando, Fla.  
AMERICAN ASSOCIATION OF FREIGHT TRAFFIC OFFICERS.—Grant Williams, 1341 Railway Exchange, Chicago.  
AMERICAN ASSOCIATION OF GENERAL BAGGAGE AGENTS.—E. L. Duncan, 332 So. Michigan Ave., Chicago. Annual meeting, June 23, 1925, Portland, Ore.  
AMERICAN ASSOCIATION OF PASSENGER TRAFFIC OFFICERS.—W. C. Hope, C. R. R. of N. J., 143 Liberty St., New York. Next meeting, October, 1925, New Orleans, La.  
AMERICAN ASSOCIATION OF RAILROAD SUPERINTENDENTS.—J. Rothschild, Room 400, Union Station, St. Louis, Mo. Next convention, June 16-19, 1925, Jefferson Hotel, Richmond, Va.  
AMERICAN ASSOCIATION OF SUPERINTENDENTS OF DINING CARS.—C. H. Shircliffe, Chicago & North Western Ry., Chicago. Annual meeting, October 6, Hotel Statler, St. Louis, Mo.  
AMERICAN ELECTRIC RAILWAY ASSOCIATION.—J. W. Welsh, 8 W. 40th St., New York. Annual convention, October 5-9, 1925, Atlantic City, N. J.  
AMERICAN RAILROAD MASTER TINNERS', COPPERSMITHS' AND PIPE FITTERS' ASSOCIATION.—C. Borchardt, 202 North Hamilton Ave., Chicago, Ill.  
AMERICAN RAILWAY ASSOCIATION.—H. J. Forster, 30 Vesey St., New York, N. Y.  
Division I.—Operating.—J. C. Caviston, 30 Vesey St., New York. Freight Station Section (including former activities of American Association of Freight Agents).—R. O. Wells, Freight Agent, Illinois Central Railroad, Chicago, Ill.  
Medical and Surgical Section.—J. C. Caviston, 30 Vesey St., New York.  
Protective Section (including former activities of the American Railway Chief Special Agents and Chiefs of Police Association).—J. C. Caviston, 30 Vesey St., New York, N. Y. Next meeting, July 8-10, Auditorium Hotel, Chicago.  
Safety Section.—J. C. Caviston, 30 Vesey St., New York.  
Telegraph and Telephone Section (including former activities of the Association of Railroad Telegraph Superintendents).—W. A. Fairbanks, 30 Vesey St., New York. Next meeting, October 20-22, 1925, New Orleans, La.  
Division II.—Transportation (including former activities of the Association of Transportation and Car Accounting Officers).—G. W. Covert, 431 South Dearborn St., Chicago, Ill.  
Division III.—Traffic, J. Gottschalk, 143 Liberty St., New York.



Division IV.—Engineering, E. H. Fritch, 431 South Dearborn St., Chicago, Ill. Exhibit by National Railway Appliances Association. Construction and Maintenance Section.—E. H. Fritch. Electric Section.—E. H. Fritch. Signal Section (including former activities of the Railway Signal Association).—H. S. Balliet, 30 Vesey St., New York, N. Y. Next meeting, Sept. 29 to Oct. 1, West Baden Springs, Ind.

Division V.—Mechanical (including former activities of the Master Car Builders' Association and the American Railway Master Mechanics' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Business meeting, Hotel Drake, June 16-18, 1925. No exhibit in 1925.

Equipment Painting Section (including former activities of the Master Car and Locomotive Painters' Association).—V. R. Hawthorne, 431 South Dearborn St., Chicago, Ill. Next meeting, September 15-17, 1925, St. Paul, Minn.

Division VI.—Purchases and Stores (including former activities of the Railway Storekeepers' Association).—W. J. Farrell, 30 Vesey St., New York, N. Y.

Division VII.—Freight Claims (including former activities of the Freight Claim Association).—Lewis Pilcher, 431 South Dearborn St., Chicago, Ill.

Car Service Division.—C. A. Buch, 17th and H Sts., N. W., Washington, D. C.

AMERICAN RAILWAY BRIDGE AND BUILDING ASSOCIATION.—C. A. Lichty, C. & N. W. Ry., 319 N. Waller Ave., Chicago. Next convention, October 20-22, 1925, Buffalo, N. Y. Exhibit by Bridge and Building Supply Men's Association.

AMERICAN RAILWAY DEVELOPMENT ASSOCIATION.—A. L. Moorshead, Industrial Engineer, Erie R. R., New York, N. Y.

AMERICAN RAILWAY ENGINEERING ASSOCIATION.—(Works in co-operation with the American Railway Association Division IV.) E. H. Fritch, 431 South Dearborn St., Chicago. Exhibit by National Railway Appliances Association.

AMERICAN RAILWAY MASTER MECHANICS' ASSOCIATION.—(See American Railway Association, Division V.)

AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—G. G. Macina, C. M. & St. P. Ry., 11402 Calumet Ave., Chicago. Annual convention, September 2-4, 1925, Hotel Sherman, Chicago. Exhibit by Supply Association of the American Railway Tool Foremen's Association.

AMERICAN SHORT LINE RAILROAD ASSOCIATION.—T. F. Whittelsey, 1319-21 F St., N. W., Washington, D. C.

AMERICAN SOCIETY FOR STEEL TREATING.—W. H. Eisenman, 4600 Prospect Ave., Cleveland, Ohio. Annual convention, week of September 14, 1925, Cleveland, Ohio.

AMERICAN SOCIETY FOR TESTING MATERIALS.—C. L. Warwick, 1315 Spruce St., Philadelphia, Pa. Annual meeting, June 23-26, Chalfonte-Haddon Hall, Atlantic City, N. J.

AMERICAN SOCIETY OF CIVIL ENGINEERS.—29 W. 39th St., New York. Regular meetings 1st and 3rd Wednesday in month, except July and August, 33 W. 39th St., New York.

AMERICAN SOCIETY OF MECHANICAL ENGINEERS.—Calvin W. Rice, 29 W. 39th St., New York. Railroad Division, A. F. Stuebing, Chief Engineer, Bradford Draft Gear Co., 23 W. 43rd St., New York. Regional meeting, June 22-25, 1925, Portland, Oregon.

AMERICAN TRAIN DISPATCHERS' ASSOCIATION.—C. L. Darling, 10 East Huron St., Chicago, Ill. Biennial convention, July 20, 1925, Chicago.

AMERICAN WOOD PRESERVERS' ASSOCIATION.—E. J. Stocking, 111 West Washington St., Chicago. Next convention, January 26-28, 1926, Cleveland, Ohio.

ASSOCIATION OF RAILWAY CLAIM AGENTS.—H. D. Morris, District Claim Agent, Northern Pacific Ry., St. Paul, Minn. Annual meeting, June 17-19, 1925, Royal Alexandra Hotel, Winnipeg, Canada.

ASSOCIATION OF RAILWAY ELECTRICAL ENGINEERS.—Jos. A. Andreucetti, C. & N. W., Room 411, C. & N. W. Sta., Chicago. Annual meeting, October 27-30, Hotel Sherman, Chicago. Exhibit by Railway Electrical Supply Manufacturers' Association.

ASSOCIATION OF RAILWAY EXECUTIVES.—Stanley J. Strong, 17th and H Sts., N. W., Washington, D. C.

ASSOCIATION OF RAILWAY SUPPLY MEN.—E. E. Thulin, Peoples Gas Bldg., Chicago. Meeting with International Railway General Foremen's Association.

ASSOCIATION OF RAILWAY TELEGRAPH SUPERINTENDENTS.—(See American Railway Association, Division I.)

ASSOCIATION OF TRANSPORTATION AND CAR ACCOUNTING OFFICERS.—(See American Railway Association, Division II.)

BRIDGE AND BUILDING SUPPLY MEN'S ASSOCIATION.—B. J. Wilson, Pocket List of Railroad Officials, 1428 Lytton Bldg., Chicago. Meeting with American Railway Bridge and Building Association.

CANADIAN RAILWAY CLUB.—C. R. Crook, 129 Chaffron St., Montreal, Que.

CAR FOREMEN'S ASSOCIATION OF CHICAGO.—Aron Kline, 626 North Pine Ave., Chicago. Regular meetings, 2nd Monday in month, except June, July and August, Great Northern Hotel, Chicago.

CAR FOREMEN'S ASSOCIATION OF ST. LOUIS, MO.—R. E. Giger, 721 North 23rd St., East St. Louis, Ill. Meetings, first Tuesday in month at the American Hotel Annex, St. Louis.

CENTRAL RAILWAY CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 2nd Thursday, January to November. Interim meetings, 2nd Thursday, February, April, June, Hotel Statler, Buffalo, N. Y.

CHICAGO CLAIM CONFERENCE, Personal Injury Section.—F. L. Johnson, Chicago & Alton R. R., 340 Harrison St., Chicago. Meets 12:30 p. m., first Monday each month, Sherman Hotel, Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S ASSOCIATION.—A. S. Sternberg, Belt Ry. of Chicago, Polk and Dearborn Sts., Chicago. Annual convention, September 22-24, Hotel Sherman, Chicago.

CHIEF INTERCHANGE CAR INSPECTORS' AND CAR FOREMEN'S SUPPLY MEN'S ASSOCIATION.—Bradley S. Johnson, W. H. Miner, Rookery Bldg., Chicago, Ill. Meeting with Chief Interchange Car Inspectors' and Car Foremen's Association.

CINCINNATI RAILROAD CLUB.—W. C. Cooder, Union Central Bldg., Cincinnati, Ohio. Meetings, 2nd Tuesday in February, May, September and November.

CLEVELAND STEAM RAILWAY CLUB.—F. L. Frericks, 14416 Alder Ave., Cleveland, Ohio. Meetings, first Monday each month, Hotel Cleveland, Public Square, Cleveland.

EASTERN RAILROAD ASSOCIATION.—E. N. Bessling, 614 F St., N. W., Washington, D. C.

FREIGHT CLAIM ASSOCIATION.—(See American Railway Association, Division VII.)

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' ASSOCIATION.—W. J. Mayer, Michigan Central R. R., Detroit, Mich. Next meeting, August 18-20, 1925, Hotel Winton, Cleveland, O. Exhibit by International Railroad Master Blacksmiths' Supply Men's Association.

INTERNATIONAL RAILROAD MASTER BLACKSMITHS' SUPPLY MEN'S ASSOCIATION.—Edwin T. Jackman, 710 W. Lake St., Chicago.

INTERNATIONAL RAILWAY CONGRESS.—Office of Permanent Commission of the Association, 74 rue du Progrès, Brussels, Belgium. General secretary, P. Ghilain. Next session of the Congress, London, June 22-July 6.

INTERNATIONAL RAILWAY FUEL ASSOCIATION.—J. B. Hutchison, 6000 Michigan Ave., Chicago. Exhibit by International Railway Supply Men's New York.

INTERNATIONAL RAILWAY GENERAL FOREMEN'S ASSOCIATION.—Wm. Hall, 1061 W. Wabasha Ave., Winona, Minn. Annual convention, September 8-11, 1925, Hotel Sherman, Chicago.

INTERNATIONAL RAILWAY SUPPLY MEN'S ASSOCIATION.—F. S. Wilcoxon, The Edna Brass Manufacturing Company, 460 McCormick Bldg., Chicago, Ill. Meeting with International Railway Fuel Association.

MASTER BOILER MAKERS' ASSOCIATION.—Harry D. Vought, 26 Cortlandt St., New York.

MASTER CAR AND LOCOMOTIVE PAINTERS' ASSOCIATION.—See A. R. A., Division V.)

MASTER CAR BUILDERS' ASSOCIATION.—(See A. R. A., Division V.)

MOBILE TRAFFIC & TRANSPORTATION CLUB.—T. C. Schley, 71 Conti St., Mobile, Ala. Regular dinner meetings, 6 p. m. on 2nd Thursday of each month, Cawthon Vineyard, Mobile, Ala.

NATIONAL ASSOCIATION OF RAILWAY TIE PRODUCERS.—J. S. Penney, T. J. Moss Tie Company, St. Louis, Mo. Next convention, 1925, Chicago.

NATIONAL ASSOCIATION OF RAILROAD AND UTILITIES COMMISSIONERS.—James B. Walker, 49 Lafayette St., New York.

NATIONAL FOREIGN TRADE COUNCIL.—O. K. Davis, 1 Hanover Square, New York. Twelfth convention, June 24-26, Seattle, Wash.

NATIONAL HIGHWAY TRAFFIC ASSOCIATION.—Elmer Thompson, 12 East 53rd St., New York.

NATIONAL RAILWAY APPLIANCE ASSOCIATION.—C. W. Kelly, 825 South Wabash Ave., Chicago. Annual exhibition at convention of American Railway Engineering Association.

NATIONAL SAFETY COUNCIL.—Steam Railroad Section: E. R. Cott, Safety Agent, Hocking Valley Ry., Columbus, Ohio.

NEW ENGLAND RAILROAD CLUB.—W. E. Cade, Jr., 683 Atlantic Ave., Boston, Mass. Regular meetings, 2nd Tuesday in month, excepting June, July, August and September, Copley-Plaza Hotel, Boston, Mass.

NEW YORK RAILROAD CLUB.—Harry D. Vought, 26 Cortlandt St., New York. Regular meetings, 3rd Friday in month, except June, July and August, at 29 W. 39th St., New York. Midsummer festival, July 9, Travers Island.

PACIFIC RAILWAY CLUB.—W. S. Wollner, 64 Pine St., San Francisco, Cal. Regular meetings, 2nd Thursday in month, alternately in San Francisco and Oakland.

RAILWAY ACCOUNTING OFFICERS' ASSOCIATION.—E. R. Woodson, 1116 Woodward Building, Washington, D. C. Annual meeting, June 10, 1925, Hotel Traymore, Atlantic City, N. J.

RAILWAY BUSINESS ASSOCIATION.—Frank W. Noxon, 600 Liberty Bldg., Broad and Chestnut Sts., Philadelphia, Pa. Annual meeting, November, 1925.

RAILWAY CAR MANUFACTURERS' ASSOCIATION.—W. C. Tabbert, 61 Broadway, New York.

RAILWAY CLUB OF PITTSBURGH.—J. D. Conway, 515 Grandview Ave., Pittsburgh, Pa. Regular meetings, 4th Thursday in month, except June, July and August, Fort Pitt Hotel, Pittsburgh, Pa.

RAILWAY DEVELOPMENT ASSOCIATION.—(See Am. Ry. Development Assn.)

RAILWAY ELECTRICAL SUPPLY MANUFACTURERS' ASSOCIATION.—Edward Wray, 9 S. Clinton St., Chicago. Annual meeting with Association of Railway Electrical Engineers.

RAILWAY EQUIPMENT MANUFACTURERS' ASSOCIATION.—Joseph Sinkler, Pilot Packing Co., Peoples Gas Bldg., Chicago. Meeting with Traveling Engineers' Association.

RAILWAY FIRE PROTECTION ASSOCIATION.—R. R. Hackett, Baltimore & Ohio R. R., Baltimore, Md.

RAILWAY REAL ESTATE ASSOCIATION.—C. C. Marlor, Room 1143, Transportation Building, Chicago.

RAILWAY SIGNAL ASSOCIATION.—(See A. R. A., Division IV., Signal Section.)

RAILWAY STOREKEEPERS' ASSOCIATION.—(See A. R. A., Division VI.)

RAILWAY SUPPLY MANUFACTURERS' ASSOCIATION.—J. D. Conway, 1841 Oliver Bldg., Pittsburgh, Pa. Meets with Mechanical Division, A. R. A. No exhibit in 1925.

RAILWAY TELEGRAPH AND TELEPHONE APPLIANCE ASSOCIATION.—G. A. Nelson, 30 Church St., New York. Meets with Telegraph and Telephone Section of A. R. A., Division I.

RAILWAY TREASURY OFFICERS' ASSOCIATION.—L. W. Cox, Commercial Trust Bldg., Philadelphia, Pa. Next meeting, September 8-9, 1925, Yellowstone National Park, Wyo.

ROADMASTERS' AND MAINTENANCE OF WAY ASSOCIATION.—P. J. McAndrews, C. & N. W. Ry., Sterling, Ill. Next convention, September 22-24, 1925, Kansas City, Mo. Exhibit by Track Supply Association.

ST. LOUIS RAILWAY CLUB.—B. W. Frauenthal, Union Station, St. Louis, Mo. Regular meetings, 2nd Friday in month, except June, July and August.

SIGNAL APPLIANCE ASSOCIATION.—F. W. Edmunds, Sunbeam Electric Manufacturing Company, New York City. Meeting with American Railway Association, Signal Section.

SOUTHEASTERN CARMEN'S INTERCHANGE ASSOCIATION.—J. E. Rubley, Southern Railway Shop, Atlanta, Ga. Meets semi-annually.

SOUTHERN AND SOUTHWESTERN RAILWAY CLUB.—A. T. Miller, P. O. Box 1205, Atlanta, Ga. Regular meetings, 3rd Thursday in January, March, May, July, September and November, Piedmont Hotel, Atlanta.

SOUTHERN ASSOCIATION OF CAR SERVICE OFFICERS.—J. L. Carrier, Car Serv. Agent, Tenn. Cent. Ry., 319 Seventh Ave., North Nashville, Tenn.

SUPPLY ASSOCIATION OF AMERICAN RAILWAY TOOL FOREMEN'S ASSOCIATION.—H. S. White, 9 N. Jefferson St., Chicago.

TRACK SUPPLY ASSOCIATION.—W. C. Kidd, Ramapo-Ajax Corporation, Hillburn, N. Y. Meets with Roadmasters' and Maintenance of Way Association.

TRAVELING ENGINEERS' ASSOCIATION.—W. O. Thompson, 1177 East 98th St., Cleveland, Ohio. Annual meeting, September 15-18, 1925, Chicago. Exhibit by Railway Equipment Manufacturers' Association.

WESTERN RAILWAY CLUB.—Bruce V. Crandall, 226 West Jackson Boulevard, Room 1001, Chicago. Regular meetings, 3rd Monday each month, except June, July and August.

WESTERN SOCIETY OF ENGINEERS.—Edgar S. Nethercut, 1735 Monadnock Block, Chicago, Ill.

## Traffic News

The Missouri Pacific will discontinue the operation of eight local passenger trains on its lines in Kansas on account of the inroads in its passenger business caused by motor buses and private automobiles.

A load of lumber weighing 12,064 tons was recently moved through the Panama Canal, said to be the largest cargo of lumber ever loaded on one vessel. It was on the steamship Lewis Luckenbach, en route from Portland, Oregon, to Boston, Mass.

The Union Pacific and the Wabash on June 1 placed in service a 26½-hr. train between St. Louis, Mo., and Denver, Colo., to be known as the St. Louis-Colorado Limited. The new train leaves St. Louis at 2 p. m. and arrives at Denver at 3:30 p. m. the next day.

The Atchison, Topeka & Santa Fe reports having carried 42 train-loads of passengers eastward from Los Angeles on May 22, 23, 24 and 25; fifteen trains on the 22nd and 9 trains on each day thereafter. These were mainly people traveling on "back-east" summer excursion tickets, good for return until October 31. Just before the beginning of this movement the Santa Fe had landed in Los Angeles about 4,000 tourists from the east, who also were traveling on special rate tickets.

A large excursion which was run from Boston to Montreal last week over the Boston & Maine and the Canadian Pacific, was the cause of considerable excitement on the return trip, some 50 or more persons being detained by United States custom officers at Newport, Vt., with questions as to their right to enter the United States; and 18 were returned to Montreal, the custom officers believing that they were aliens attempting to enter the United States on tickets which had been sold at Boston to other persons.

The Postmaster General has filed with the Interstate Commerce Commission a reply to the petition recently filed by the railroads for a re-examination of the rates for the transportation of the mails with a view to an advance. Mr. New takes the position that the present rates, instead of being too low, ought to be decreased. He denies that the rates are unduly low and declares that such increase in the loading of units of space as may have occurred is immaterial and unrelated to the consideration of rates fixed on a space basis and adjusted to volume and kind of service and also to cost.

### New York-Chicago Air Mail Service

The New York-Chicago overnight air mail service is ready to begin functioning on July 1, Postmaster General New has announced. Emergency landing fields have been established 10 to 15 miles apart in the mountain regions of Pennsylvania. The schedule as mapped out, calls for a plane to leave the New York field each night except Saturday and Sunday at 9:30 p. m. and to arrive at the Chicago field at 5:45 a. m., with an elapsed flying time of nine hours and 15 minutes. To connect with the plane the mail must leave the New York post office for the field at 8 o'clock. One hour will be consumed between the field and the post office at Chicago, so that the mail will arrive at the Chicago office at 6:45 a. m. East bound mail will leave the Chicago office at 7:30 p. m., each evening except Saturday and Sunday to catch the plane scheduled to depart at 8:30. This plane arrives at the New York field at 6 a. m., and the New York post office at 7:30 a. m. The postage rate has been fixed at 10 cents an ounce or fraction thereof.

THE COURT OF APPEALS of the District of Columbia on June 2 sustained the decision of the Supreme Court of the District of Columbia denying the application of the Kansas City Southern for a writ of mandamus to require the Interstate Commerce Commission to report a valuation for the company's properties along different lines from that followed. The court said that the relief sought by the company amounted to a vacation of the valuation order and the making of a new valuation and that the action of mandamus cannot be used as a substitute for an appeal or as a writ of error.

## Commission and Court News

### Interstate Commerce Commission

The Interstate Commerce Commission has suspended from June 1 until September 29 the operation of various tariffs published by Agents E. B. Boyd and B. T. Jones and certain individual carriers which propose to increase freight rates from points in Western Trunk Line territory to St. Paul, Minneapolis, and Minnesota Transfer, Minn., applicable as proportional rates on traffic destined beyond. These schedules also propose to apply the Indiana class rates subject to the western classification to the northwest as minima from points in Ohio and to cancel across-lake routes in connection with class rates from Indiana to points in the northwest.

### Court News

#### 28-Hour Law Applicable Only If Wilfully Broken

The federal district court for the Eastern District of Tennessee holds that the Twenty-Eight Hour Law only applies to cases where the carrier, with knowledge that the statute is about to be violated, purposely and intentionally disregards it. Suit for the penalty was dismissed where a carload of hogs was confined without unloading for 38 hours, when a clerk overlooked the checking of the waybill at the time of a strike.—U. S. v. Southern, 1 Fed. (2nd) 607.

#### Not Liable to Guest in Automobile

The Georgia Court of Appeals holds that, while it is true that the negligence of the driver of an automobile is not imputable to a guest, the latter cannot recover in a crossing injury case, where his petition shows that his injuries were occasioned solely by the negligence or want of care of the driver, and that the acts of negligence alleged against the railroad, in maintaining an arc light so as to blind plaintiff's view, obstructing the crossing in violation of an ordinance, failing to maintain a flagman or some signal, did not contribute to such negligence.—Brinson v. Davis (Ga. App.) 122 S. E. 643.

#### Presumption as to Place of Injury to Shipment

The Georgia Court of Appeals holds that when goods moving in interstate commerce upon a through bill of lading, are delivered in bad condition and the evidence shows that they were sound when received by the initial carrier, but does not affirmatively establish where the loss occurred, there is a common-law presumption, applicable under the Carmack Amendment, against the delivering carrier, that the injury occurred on its line.—Barron Bros. v. New York, N. H. & H. (Ga. App.) 122 S. E. 83. Illinois Central v. Banks (Ga. App.) 122 S. E. 85.

#### Contributory Negligence Not a

##### Defense—Defective Drawbar

An interstate train taking a siding to meet a train became separated because a drawbar pulled out. A chain coupling was made to get the train off the main line. A brakeman, with the conductor, undertook to unhook the chain to uncouple the train from the defective car. The head brakeman uncoupled the engine, causing the train to move backward. He then caused the brakes to be applied to the cars ahead of the defective car. When the train moved backward, the brakeman locked his arms about the axle of the defective car and swung his body over the chain. When the front part of the train stopped the chain became taut and squeezed his body against the car above him, causing injuries from which he died. In an action under the federal Safety Appliance Act the Minnesota Court held that the pulling out of the drawbar was a proximate cause of the injuries, that contributory negligence was not a defense and therefore before a violation of rules could avail defendant it would have to constitute the sole proximate cause of the injuries.—Schendel v. Chicago Great Western (Minn.) 198 N. W. 450.



## Foreign Railway News

### Americans May Yet Control Chester Concession

Recent developments in connection with the Ottoman American Development Company's billion-dollar Chester concession for railway and other industrial projects in Turkey have made it appear that the fight for control of the concession may be terminated shortly, according to the New York Times. At a meeting of stockholders recently, 13,000 shares were voted in favor of control being vested in American interests, including the Chesters, as against 7,000 shares favoring British control, which would take in the interests of C. A. Barnard and K. E. Clayton-Kennedy. The Chesters, however, were not represented at the meeting and their 20,000 shares were not voted.

Admiral Colby M. Chester, who obtained the concessions, has had conferences with Henry Woodhouse, the head of the stockholders' group which is committed to American control. Mr. Woodhouse reports that the Admiral was pleased with the outcome of the meeting. There had been considerable speculation as to whether the Admiral and his two sons, Commander Arthur Chester and Colby M. Chester, Jr., were willing to forego the British offer to take over the concession.

Mr. Woodhouse said he had received a letter from the opposition's representative, understood to be an American, who cast the 7,000 votes Tuesday against the control reverting to the Chesters, offering to sell the 7,000 shares to the Woodhouse group if proper terms were submitted. According to Mr. Woodhouse, the offer will probably be accepted. This, he said, would mean virtually 100 per cent control by the Americans, since the shares held by the British factions are considered as belonging to the Chesters by default on the payment to them.

The Bagdad Railway construction concession is one of those included in the group covered by the grant of Nationalist Turkey to Admiral Chester and his associates. A survey of the railway's equipment is to be one of the first steps in carrying out the terms of the concession. In addition, there are valuable oil and mineral rights to be developed. The concession is intact, notwithstanding differences resulting from the British domination of Mosul, and that of France in a portion of the territory covered by the concession terms.

### Miscellaneous

The following reports have been received by the Transportation Division of the Bureau of Foreign & Domestic Commerce from its agents in various parts of the world:

A 25 per cent reduction in Latvian Railway rates on all exhibits for the Riga Fair has been announced. The International Sleeping Car Service has engaged to forward luggage and certain merchandise to Latvia, whereby shipments will arrive five times quicker.

Bids for 1,050 cars for the Czech Railways have been invited, but thus far no contracts have been awarded. Orders usually are placed in March.

The Peruvian railways are resuming services after the disastrous floods, transportation having been resumed over the Central Railway to the interior and Cerro de Pasco region. Services have not yet been resumed by railways in the north, but the general feeling is more optimistic as a result of extensive purchases of building materials by these railways.

The Norte Railway of Spain is seeking authorization for a 200,000,000-peseta bond issue, most of the money so raised to be used for the electrification of short lines running between Manross and Barcelona, Madrid and Avila, Madrid and Segovia, and Alsasua and Zumarraga.

The Czech Ministry of Railways has ordered six locomotives to be used for express trains in order to create greater efficiency in the service. The type of locomotive ordered is of three cylinders, with a weight of 88 tons and a speed on the up-grade of about 35 miles an hour, and a pulling capacity of 1,750 h.p. which increased to a speed of 65 miles per hour and a pulling capacity of 1,970 h.p. on the level.

## Equipment and Supplies

### Locomotives

THE TEXAS & PACIFIC contemplates buying about 20 locomotives.

THE NATIONAL TUBE COMPANY is inquiring for 2 eight-wheel switching locomotives.

THE LAKE SUPERIOR & ISHPEMING is inquiring for one consolidation type locomotive.

THE FULTON IRON WORKS COMPANY is inquiring for 3 Consolidation type locomotives.

THE ST. PAUL BRIDGE & TERMINAL RAILWAY is inquiring for one, eight-wheel switching locomotive.

THE DELAWARE, LACKAWANNA & WESTERN has ordered 3 three-cylinder Mountain type locomotives from the American Locomotive Company. These locomotives are similar to the 2 ordered by this company from the same builder and reported in the *Railway Age* of November 8, 1924.

### Freight Cars

THE SOUTHERN PACIFIC will build 300 box cars and 20 caboose cars in its own shops.

P. J. CAMPION has ordered 4 dump cars from the American Car & Foundry Company.

THE GREAT NORTHERN is inquiring for 100 steel underframes for flat cars, of 50 tons' capacity.

THE SHIPPERS CAR LINE, INC. has ordered from the American Car & Foundry Company 150 tank cars of 50 tons' and 10,000 gal. capacity.

THE GENERAL REFRIGERATOR LINE, reported in the *Railway Age* of January 17 as inquiring for 1,000 refrigerator cars, has postponed this inquiry indefinitely.

THE MATHIESON ALKALI WORKS, Niagara Falls, N. Y., has ordered from the American Car & Foundry Company 10 multiunit tank cars of 30 tons' capacity.

THE KANSAS CITY, MEXICO & ORIENT, reported in the *Railway Age* of February 14 as inquiring for 150 box cars, 50 stock cars and 50 automobile cars, has decided not to buy this equipment.

THE HOOKER ELECTROCHEMICAL COMPANY, Niagara Falls, N. Y., has ordered from the American Car & Foundry Company 5 tank cars with 30-ton trucks and 15-ton capacity liquid chlorine tanks.

THE CHICAGO, MILWAUKEE & ST. PAUL, in addition to having placed orders recently for 6,500 new freight cars has prepared a car rebuilding program to include 5,000 freight cars and 14 dining cars. The schedule calls for the delivery of 1,000 freight cars per month after June 1.

### Passenger Cars

THE NATIONAL RAILWAYS OF MEXICO are inquiring for 10 steel express cars, 72 ft. long.

THE PITTSBURGH & LAKE ERIE has ordered 2 combination passenger and baggage cars from the Pressed Steel Car Company.

THE NEW YORK, ONTARIO & WESTERN has ordered one combination passenger and baggage gasoline-electric car from the J. G. Brill Company.

THE MARYLAND & DELAWARE COAST RAILWAY Co., has ordered from the J. G. Brill Company one combination passenger gasoline rail motor car and passenger trailer.

THE LEHIGH VALLEY has ordered from the Electro-Motive Company, Cleveland, Ohio, 4 gas electric passenger cars with a

small baggage compartment and a seating capacity for 55 passengers in each car; one gas electric combination baggage and mail car and one trailer car with a seating capacity for 80 passengers.

## Iron and Steel

THE CHICAGO GREAT WESTERN is inquiring for 200 tons of structural steel for a viaduct in St. Paul, Minn.

## Machinery and Tools

THE NORFOLK & WESTERN has placed an order for a 3-ton crane trolley.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for one clam-shell bucket.

THE ATCHISON, TOPEKA & SANTA FE is inquiring for one 32-in. shaper, one 24-in. by 12-ft. engine lathe, and one 36-in. by 12-ft. planer.

THE ILLINOIS CENTRAL is inquiring for one 20-in. by 10-ft. tool room lathe, one 20-in. by 10-ft. heavy duty type engine lathe and one 4-in. heavy turret lathe.

THE UNION PACIFIC has placed orders for the following tools: A 6 ft. radial drill; a 48-in. car wheel borer; 2 axle lathes and a 12 ft. pneumatic plate flanging plant.

THE CHICAGO, MILWAUKEE & ST. PAUL is inquiring for the following tools:

- 1 15-ton, 80-ft. floor-operated overhead traveling crane,
- 1 90-in. back geared driving wheel lathe.
- 1 18-in. by 8-ft. engine lathe,
- 1 24-in. by 12-ft. engine lathe,
- 1 36-in. by 18-ft. engine lathe,
- 1 32-in. shaper,
- 1 44-in. boring mill,
- 1 2-in. turret lathe,
- 1 72-in. radial drill,
- 1 42-in. drill press,
- 1 20-in. stationary hand drill,
- 3 double 12-in. emery grinders,
- 1 1,500-lb. steam hammer,
- 1 48-in. punch and shear to punch 1-in. holes through 1-in. steel,
- 1 power hack saw,
- 1 double head bolt cutter,
- 2 300-amp. electric welders,
- 1 Whiting driver drop pit table.
- 1 3,000-lb. electric crane truck.

## Miscellaneous

THE GREAT NORTHERN TRANSIT COMPANY, St. Paul, Minn., a subsidiary of the Great Northern Railway Company, is asking for bids on 20 highway motor buses with seating capacity for from 25 to 30 passengers.

## Pennsylvania Orders Equipment

### for Marine Department

Orders have just been placed by the Pennsylvania Railroad for 8 steel car floats, 7 covered wooden barges and 2 steel harbor tug boat hulls, to be used in the company's marine operations in New York harbor and on Chesapeake Bay. The 8 steel car floats are to be built by the Sun Shipbuilding & Dry Dock Company, Chester, Pa. The specifications call for 2 floats 145 ft. long, with a 36 ft. beam and 10 ft. depth; 2 floats 250 ft. long, with a 34 ft. beam and 9 ft. depth, and 2 floats 330 ft. long, with a 38 ft. beam and a 10 ft., 6 in. depth. These 6 floats will be assigned to service in New York harbor. The 2 other car floats are to be larger and heavier, having been designed for towing service across Chesapeake Bay between Cape Charles and Norfolk, Va. These floats will measure 358 ft. long, with a 47 ft., 2 in. beam, and a 12 ft., 6 in. depth.

The 7 covered wooden barges will be built by Ira S. Bushey & Sons, Inc., Brooklyn, N. Y. They will be assigned to general use in New York harbor. The new barges will be 100 ft. long, with a 30 ft. beam and a 9 ft. 2 in. depth.

The Newport News Shipbuilding & Dry Dock Company, Newport News, Va., will build the 2 steel tug boat hulls, which are also designed for the New York harbor service. These hulls will be 105 ft. long, with a 24 ft. beam and a 14 ft. depth.

## Supply Trade News

The Hannauer Car Retarder Company, Chicago, has been incorporated to manufacture and sell car retarders and other specialties.

J. D. Andrews has been appointed vice-president and general manager of the Standard Tank Car Company, with headquarters at Sharon, Pa.

A. M. Castle & Company is again representing the Rome Iron Mills, Inc., at Chicago, Seattle, Wash., San Francisco, Cal., and Los Angeles.

W. G. Hume, assistant sales manager of the Keystone Steel & Wire Company, Peoria, Ill., has been promoted to sales manager to succeed H. G. Moore, resigned.

H. E. Graham, vice-president in charge of sales of the Illinois Car & Manufacturing Company, with headquarters in Chicago, has resigned to become vice-president in charge of



H. E. Graham

sales and operation of the Standard Tank Car Company, with headquarters in Sharon, Pa. He was born on June 21, 1880, in Alliance, Ohio, and entered railway service in 1896 as a call boy in the operating department of the Pennsylvania at Pittsburgh, Pa. He was later a time clerk in the division superintendent's office and a bill clerk in the traffic department until 1898, when, upon the organization of the Pressed Steel Car Company, he entered its employ as chief clerk in the traffic department at Pitts-

burgh, Pa. He held this position until 1905 when he was promoted to traffic manager, with the same headquarters, which position he held until 1920, when he was promoted to manager of traffic and sales, with headquarters in New York. He held the latter position until November, 1923, when he resigned to become vice-president in charge of sales of the Illinois Car & Manufacturing Company, which position he has held until his recent appointment.

Marshall A. Carlton has been appointed Baltimore representative of the Verona Tool Works, Pittsburgh, Pennsylvania, with headquarters in the Munsey building, Baltimore, Maryland.

The Crane Company, Chicago, has acquired property on India street, San Diego, Cal., and contemplates the erection of a factory branch and distributing plant to cost about \$80,000.

E. M. McLean, sales division manager of the Four Wheel Drive Auto Company, Clintonville, Wis., has been promoted to general sales manager. S. H. Sanford, formerly sales division manager, is now assistant sales manager.

Francis W. Pratt, assistant to president of the Goodell-Pratt Company, Greenfield, Mass., has been appointed sales manager to succeed Oscar W. Bardwell, who has resigned as general sales manager but who still remains a director of the company.

L. R. Meisenhelter has been appointed by the Director of Exhibits, of the Sesquicentennial Exposition, Philadelphia, to take charge of assembling exhibits in the departments of



transportation, machinery, mines and metallurgy, and manufactures.

The American Creosote Works, Inc., New Orleans, La., and the Savannah Creosoting Company, Inc., Savannah, Ga., have located their eastern and foreign sales office at 1728 Whitehall building, New York City, in charge of Stanley H. Rose, manager of sales.

The American Manganese Steel Company has opened a new plant at Los Angeles, Cal., which gives the company facilities for producing about 25,000 tons of manganese steel castings annually. The new plant will begin production at the rate of 100 tons a month.

The Niles-Bement-Pond Company and the Pratt & Whitney Company, which hitherto maintained joint general sales and accounting departments at New York, have recently moved the sales and accounting departments to the plants. That of the Niles-Bement-Pond Company is at Hamilton, Ohio, and the Pratt & Whitney Company, at Hartford, Conn. The general executive offices of the two companies remain as formerly at New York; E. L. Leeds, general sales manager, has been appointed vice-president in charge of sales of both companies, with headquarters at New York; Harold F. Welch, New York district sales manager, has been appointed general sales manager of the Niles-Bement-Pond Company, with headquarters at Hamilton; W. P. Kirk, assistant general sales manager of the Pratt & Whitney Company; C. K. Seymour, secretary of both companies, is also vice-president, succeeding C. L. Cornell, resigned; Arlo Wilson, special accountant, has been appointed also assistant treasurer to succeed Walter R. Boom, resigned; E. L. Morgan, chief accountant of the Pratt & Whitney Company at New York, has been transferred to the Hartford office; W. L. Burk, Jr., chief accountant of the Niles-Bement-Pond Company, has been transferred from the New York office to Hamilton, and George G. Greist, general manager of the Niles Tool Works, Hamilton, has been made general manager of the Niles-Bement-Pond Company, in charge of the Hamilton office.

## Obituary

Charles A. Starbuck, president of the New York Air Brake Company, died on May 29 at his home in Croton-on-Hudson, N. Y. Mr. Starbuck was born in Niagara County, N. Y., on September 17, 1852, and was educated in the public schools of his native county. He went to New York in 1870 and first worked in the office of a diamond merchant. He afterwards entered the brake business and became vice-president of the Eames Vacuum Brake Company. In 1890 he was elected secretary of the New York Air Brake Company, the successor of the Eames Vacuum Brake Company, the following year he became vice-president and in 1895 was elected president. Under his administration the business of the company expanded to its present large proportions.

Woodson H. Hudson, vice-president of the Georgia Car & Locomotive Company, Atlanta, Ga., died on May 27 in Atlanta at the age of 64. Mr. Hudson for a number of years was connected with the Southern Railway in the motive power department.



C. A. Starbuck

## Railway Construction

ATCHISON, TOPEKA & SANTA FE.—Plans have been prepared for the construction of a passenger and freight station at Monrovia, Cal., to cost approximately \$75,000.

BALTIMORE & OHIO.—The company has awarded the following contracts:

To the Jas. F. McCabe Company, for masonry for a bridge at Chestnut Hill, W. Va.; \$7,000.

To the Sheesley & Janney Construction Company, for masonry for a bridge at Hampton, W. Va.; \$7,000.

To the Pittsburgh-Des Moines Steel Company, for five water treating plants on the Pittsburgh Terminal division; \$30,000.

To the Vang Construction Company, Cumberland, Md., for masonry for four bridges at Graysville and Wells Pit, W. Va.; \$44,000.

To the Empire Construction Company, Baltimore, Md., for masonry for four bridges, one each at Grape Island, Maplewood, Waverly and Williamstown, W. Va.; \$33,000.

To John Thatcher & Son, Brooklyn, N. Y., for a passenger station with car-floor-level platforms, a freight house and other facilities at Princes Bay and Pleasant Plains on the Staten Island Rapid Transit; \$69,000.

CENTRAL OF NEW JERSEY.—A contract has been given to the McHarg-Barton Company for the removal of two transfer float bridges and the construction of two new transfer bridges at Jersey City, N. J., at a cost of approximately \$28,000.

CENTRAL OF GEORGIA.—A contract has been awarded to the Claussen-Lawrence Construction Company, Augusta, Ga., for the construction of two stores buildings at Macon, Ga., to cost approximately \$140,000.

DETROIT, TOLEDO & IRONTON.—A contract has been awarded to the Grand-Boulton Company, Columbus, Ohio, for grading and masonry work in connection with the construction of second track from Flat Rock, Mich., to Durban, a distance of 17 miles.

NORTHERN PACIFIC.—A contract has been awarded to A. Guthrie & Company, St. Paul, Minn., for the grading in connection with the construction of coach yard facilities at St. Paul. A contract for the construction of buildings has been awarded to the Walter Butler Company, Inc., St. Paul. The track work will be done by company forces. The project includes the construction of a commissary and appurtenant buildings and a coach yard with capacity for approximately 150 coaches. The total cost of the improvement is estimated at \$850,000.

PENNSYLVANIA.—A contract has been awarded to the Ready & Callaghan Company, Chicago, for paving and other street improvement work in connection with a highway subway under this company's tracks at Fifty-sixth street, Chicago.

PENNSYLVANIA.—A contract has been given to the Seaboard Construction Company, Philadelphia, for the erection of steel for a new floor for this company's bridge over the Susquehanna river at Sunbury, Pa.

PENNSYLVANIA.—A contract for grading to cost approximately \$100,000 preparatory to the erection of a new American Railway Express building at Sunnyside Yard, Long Island City, N. Y., has been awarded to Henry Steers, Inc., New York.

SOUTHERN.—This company, the Alabama Great Southern, the Louisville & Nashville and the Seaboard Air Line have agreed with the City of Birmingham, Ala., to construct a viaduct to carry Twenty-fourth street, that city, over the railway companies' tracks. The work will be undertaken by the Southern, acting as agent for itself, the other railways and the City of Birmingham. The cost is estimated at \$350,000.

SOUTH GEORGIA.—This company has applied to the Interstate Commerce Commission for authority for an extension from Perry to Deadman's Bay, Fla., 35 miles.

SOUTHERN PACIFIC.—Application has been made to the Railroad Commission of California for permission to lease the 16½-mile narrow gage line of the Lake Tahoe Railroad & Navigation Company and to reconstruct it as a standard gage line.

## Railway Financial News

**ATLANTIC COAST LINE.—1924 Earnings.** The annual report for the Atlantic Coast Line for 1924 shows net income after charges of \$13,275,844, equivalent after preferred dividends to \$19.34 a share on \$68,586,200 common stock. In 1923, net income was \$12,797,073 or \$18.64 a share on the common stock. Selected items from the income statement follow:

ATLANTIC COAST LINE			
	1924	1923	Increase or decrease
Operating revenues .....	\$81,785,921	\$80,882,311	\$903,611
Operating expenses .....	60,335,126	59,868,428	466,697
Net operating revenues.....	\$21,450,796	\$21,013,882	\$436,913
Railway tax accruals.....	5,625,000	5,425,000	200,000
Net operating revenues, less taxes.....	\$15,825,796	\$15,588,882	\$236,913
Uncollectible railway revenue.....	59,234	42,457	16,777
Total operating income.....	\$15,766,561	\$15,546,425	\$220,136
Non-operating income .....	5,702,500	4,984,325	718,175
Gross income .....	\$21,469,061	\$20,530,750	\$938,311
Dividend paid from non-operating income .....	685,862	.....	685,862
Interest and rentals.....	\$20,783,199	\$20,530,750	\$252,449
.....	7,020,048	7,076,070	-56,022
Miscellaneous deductions from income.....	\$13,763,151	\$13,454,680	\$308,471
.....	1,173,168	657,607	515,561
Net income .....	\$12,589,983	\$12,797,073	-\$207,090

**CLEVELAND UNION TERMINALS COMPANY.—Bonds.**—This company has applied to the Interstate Commerce Commission for authority to issue \$15,000,000 of first mortgage 5 per cent 50-year bonds guaranteed by the proprietary companies.

**ILLINOIS CENTRAL.—Bonds.**—This company, the Chicago, St. Louis & New Orleans and the Canton, Aberdeen & Nashville have applied to the Interstate Commerce Commission for authority for an issue of \$7,094,000 of Illinois Central and Chicago, St. Louis & New Orleans joint first refunding mortgage 5 per cent bonds, to be sold at not less than 97.5 to reimburse the treasury of the Illinois Central for expenditures for additions and betterments to the properties of the other two companies.

**MINNEAPOLIS & ST. LOUIS.—Receiver's Certificates.**—The Interstate Commerce Commission has authorized an issue of \$1,000,000 of 7 per cent receiver's certificates.

**NORTHERN PACIFIC.—Equipment Trusts Authorized.** The Interstate Commerce Commission has authorized the issuance of \$3,325,000 4½ per cent equipment trust certificates to be sold to J. P. Morgan & Co., at 96.89 and accrued dividends. The equipment consists of 1,800 freight cars, and 30 passenger train cars having a total approximate cost of \$4,712,215. Commissioner Eastman dissented and amplified the views given in his opinion in the recent New York Central case reported in the *Railway Age* of May 23, as follows:

There is no good reason why securities of this nature should not be sold in a competitive market. Indeed they could be sold by the carrier direct to investors, without the payment of commissions to bankers.

There is here an opportunity for the carriers to do a little housecleaning on their own account. The proposition is conservative. I am not now suggesting that all railroad securities should be sold through competitive bidding, nor even that any very large part should be sold in this way. For the present the suggestion is confined to equipment trust certificates. No candid critic will, I believe, contend that it is an impracticable suggestion as to such securities.

The importance of the opportunity presented will be clear upon reflection. The carriers resent the charge that their policies are dominated by "Wall Street." They have here a chance to demonstrate their independence in a practical way. Without attempting a complete list, our records indicate that the following large carriers market their securities only through J. P. Morgan & Company, or financial institutions closely affiliated therewith:

Atlantic Coast Line	Louisville & Nashville
Chicago, Burlington & Quincy	Nashville, Chattanooga & St. Louis
Chesapeake & Ohio	New York Central Lines
Erie	Northern Pacific
Florida East Coast	Southern Railway System.
Great Northern	

Similarly our records indicate that the following carriers use Kuhn, Loeb & Company as their exclusive fiscal agent:

Central of Georgia	Chicago, Milwaukee & St. Paul
Chicago & Eastern Illinois	Illinois Central

International-Great Northern  
Long Island  
Missouri Pacific  
New Orleans, Texas & Mexico  
Pennsylvania

Southern Pacific  
Texas & Pacific  
Union & Pacific  
Wabash

To the extent that these carriers hereafter sell securities through competitive bidding or to the extent that, even without competitive bidding, they curtail the present monopoly in the marketing of their securities, they will clearly lend weight to their declarations of independence of banking control.

**PENNSYLVANIA.—Six Months Guaranty.**—The Interstate Commerce Commission has issued a final certificate fixing the amount of this company's guaranty for the six months' period following the termination of federal control at \$65,250,596, of which \$12,250,596 was to be paid by the Treasury on the final certificate, the balance having been paid in partial payments.

**PORT ANGELES WESTERN.—Stock.**—This company has applied to the Interstate Commerce Commission for authority to issue \$4,200,000 of common stock, and to deliver \$3,375,000 of it to Lyon, Hill & Co., in payment for a 35-mile railroad extending into the spruce timber country from a connection with the Chicago, Milwaukee & St. Paul at Disque, Wash.

**SEABOARD AIR LINE.—Acquisition.**—This company has applied to the Interstate Commerce Commission for authority to acquire control of the Tavares & Gulf by purchase of its capital stock.

**SOUTHERN PACIFIC.—Equipment Trust.**—This company has applied to the Interstate Commerce Commission for authority for an issue of \$10,941,000 of equipment trust certificates to be sold at 96.91 to Kuhn, Loeb & Co.

**SOUTHERN PACIFIC.—Lease.**—This company and the Lake Tahoe Railway & Transportation Company have filed an application to the Interstate Commerce Commission for authority for the Southern Pacific to acquire control of the Lake Tahoe company by lease.

**TEXAS & PACIFIC.—Tentative Valuation.**—The Interstate Commerce Commission has issued a tentative valuation report placing the final value for rate-making purposes, as of June 30, 1916, for the property owned at \$68,170,227 and for that of the property used at \$65,083,616. The outstanding capitalization as of valuation date was \$94,382,235 and the book investment in road and equipment was \$109,250,902, which the report readjusts to \$89,139,628.

**TORONTO, HAMILTON & BUFFALO.—Annual Report.**—A total operating revenue of \$2,530,474 for the year ended December 31, 1924, is shown. This is a decrease of \$380,052 from that of the previous year. There was a falling off in freight traffic receipts amounting to \$358,008 during the year, and this was accounted for by lighter movement of bituminous coal, manufactures and miscellaneous freight, other products of mines, and grain. Passenger revenue totaled \$571,912, a decrease of \$31,524 from the previous year. An increase of \$24,231 was shown in switching revenue, which totaled \$113,204. Operating expenses for the year amounted to \$2,264,380, an increase of \$116,261, caused by heavy maintenance expenditures during the year. The ratio of earnings to expenses was 89.48 per cent, which is 17.39 per cent higher than in 1923. There was no dividend declared during the year, and the surplus of \$178,275 was carried forward to profit and loss. The balance to the credit of profit and loss was thus brought up to \$4,235,060.

### Dividends Declared

Lackawanna R. R. of New Jersey.—1 per cent, quarterly, payable July 1 to holders of record June 8.  
Lehigh Valley.—Common, 1¼ per cent, quarterly, preferred, 2½ per cent, quarterly, both payable July 1 to holders of record June 13.  
Maine Central.—Preferred \$2.50, accumulative, payable June 15 to holders of record May 29.  
New York, Lackawanna & Western.—1¼ per cent, quarterly, payable July 1 to holders of record June 13.  
Pere Marquette.—Common, 1 per cent, quarterly; payable July 1 to holders of record June 15. Preferred, 1¼ per cent, quarterly; pr. preferred, 1¼ per cent, quarterly, both payable August 1 to holders of record July 15.  
St. Louis-Southwestern.—Preferred, 1¼ per cent, quarterly, payable June 30 to holders of record June 13.  
Valley Railroad (New York) 2½ per cent, payable July 1 to holders of record June 20.

### Trend of Railway Stock and Bond Prices

	June 2	Last Week	Last Year
Average price of 20 representative railway stocks .....	81.26	81.06	64.22
Average price of 20 representative railway bonds .....	91.58	91.69	85.62



## Railway Officers

### Executive

**R. W. Williams** has been appointed executive general agent of the Southern, with headquarters at Chattanooga, Tenn.

**F. D. Hunt** has been elected president of the Willamette Valley Southern, with headquarters at Oregon City, Ore., succeeding G. B. Dimick, who has resigned.

**Henry Blakeley**, assistant vice-president in charge of traffic of the Northern Pacific, with headquarters at St. Paul, Minn., has retired after 37 years of railway service.

**H. E. Whittenberger**, general manager of the Grand Trunk Western, with headquarters at Detroit, Mich., has been elected also vice-president of the Detroit & Toledo Shore Line.

**Frederic E. Williamson**, general superintendent of the New York Terminal district of the New York Central, and chairman of the operating committee of the New York harbor



F. E. Williamson

railroads, with headquarters at New York, has been appointed vice-president in charge of maintenance and operation of the Northern Pacific, with headquarters at St. Paul, Minn., succeeding A. M. Burt, deceased. Mr. Williamson was born on June 14, 1876, at Norwalk, Ohio, and was graduated from Yale University in 1898. He entered railway service in September of that year as a clerk in the office of the New York Central & Hudson River, now a part of the New York Central, at Albany, N. Y. He was later promoted to agent at Rome, N. Y., in which capacity he served also at Utica and Troy. Mr. Williamson was later appointed chief clerk in the office of the superintendent of freight transportation at New York and still later was promoted to car accountant. He was later promoted to assistant superintendent of the Harlem division, where he remained until his promotion to superintendent of freight terminals at Albany. In July, 1910, Mr. Williamson was promoted to superintendent of the St. Lawrence division. He was transferred to the Hudson division in 1916, and in 1918 was promoted to general superintendent of the New York Terminal district, with headquarters at New York. He was transferred to the First district, with headquarters at Albany, N. Y., in July, 1921, but was transferred back to the New York Terminal district in May, 1924. Mr. Williamson remained there until his recent appointment as vice-president in charge of maintenance and operation of the Northern Pacific.

### Financial, Legal and Accounting

**A. P. Stewart**, assistant general attorney of the St. Louis-San Francisco, with headquarters at St. Louis, Mo., has been promoted to general attorney, with the same headquarters, succeeding **E. T. Miller**, promoted. **E. G. Nahler**, attorney, with headquarters at St. Louis, has also been promoted to general attorney, with the same headquarters, a newly created position.

### Operating

**T. A. Stainthorp** and **A. B. Kelly** have been appointed inspectors of transportation of the Missouri Pacific, with headquarters at St. Louis, Mo.

**B. S. Baumann**, assistant trainmaster of the Los Angeles division of the Southern Pacific, with headquarters at Indio, Cal., has been promoted to trainmaster, with the same headquarters.

**S. T. Cantrell**, superintendent of the Central division of the St. Louis-San Francisco, with headquarters at Ft. Smith, Ark., has been transferred to the Southwestern division, with headquarters at Sapulpa, Okla., succeeding **C. H. Baltzell**, who has been transferred to the Central division in place of Mr. Cantrell.

**James C. Torpey**, who has been appointed assistant superintendent of transportation of the Delaware & Hudson, with headquarters at Albany, N. Y., was born on August 5, 1894,



James C. Torpey

at Philadelphia. He attended the Pennsylvania Military Academy, from which he was graduated in 1912. He then entered Villa Nova College and was graduated from that institution in 1916. He entered railway service for the first time on March 7, 1919, when he became a yard clerk for the Delaware & Hudson. On March 16 of the following year he was promoted to trainmaster for the same company, and on March 1, 1920, he was promoted to the position of assistant trainmaster of the Susquehanna division of that road. He was serving in this latter capacity when he was again advanced, effective May 15, to the position of assistant superintendent of transportation, as noted above.

### Traffic

**J. C. Mangham**, general freight agent of the San Antonio & Aransas Pass, has been appointed assistant to the traffic manager of the Southern Pacific in charge of industrial development, with headquarters at Houston, Tex., pursuant to the merger of the San Antonio & Aransas Pass with the Southern Pacific Lines in Texas. **J. B. Brooks**, assistant general freight agent of the San Antonio & Aransas Pass, has been appointed assistant general freight agent of the Southern Pacific, with headquarters at Houston.

**C. C. Cameron**, general freight agent of the Northern and Western lines of the Illinois Central, with headquarters at Chicago, has been promoted to the newly created position of assistant freight traffic manager, in charge of rate adjustments, tariffs, and subjects related thereto, with the same headquarters. **F. H. Law**, assistant general freight agent of the Northern and Western lines, with headquarters at Chicago, has been promoted to general freight agent, with the same headquarters, succeeding Mr. Cameron. **R. G. Raasch** and **A. L. Wilson** have been appointed assistant general freight agents, with headquarters at Chicago.

**Marius de Brabant**, assistant traffic manager of the Union Pacific system, with headquarters at Los Angeles, Cal., has retired from active service. He was born in February, 1872, in France and was educated at a college in Paris, France. He entered railway service in 1891 as a clerk in the freight department of the Lehigh Valley at New York, where he was later promoted to cashier, contracting freight agent, city passenger agent and city freight agent. Mr. de Brabant was appointed general agent of the Los Angeles & Salt Lake, now a part of the Union Pacific system, with headquarters at New York, in 1905, and held that position until the beginning of federal control when he was appointed assistant general freight and passenger agent, with headquarters at

Los Angeles, Cal. In March, 1920, Mr. de Brabant was appointed assistant general traffic manager of the Los Angeles & Salt Lake and a year later was appointed assistant traffic manager of the Union Pacific system, with headquarters at Los Angeles. He remained in that position until his recent retirement.

### Purchasing and Stores

**W. B. Hall**, whose promotion to general purchasing agent of the Denver & Rio Grande Western, with headquarters at Denver, Colo., was reported in the *Railway Age* of April 25, was born on March 7, 1877, at Salt Lake City, Utah. He entered railway service in 1891 as an office boy in the motive power and car department of the Rio Grande Western, now a part of the Denver & Rio Grande Western. He was later promoted to clerk, which position he held until 1895, when he was promoted to stationer. Mr. Hall was appointed a clerk in the stores department in 1899 and in the following year was promoted to chief clerk to the purchasing agent. He was appointed stationer of the Denver & Rio Grande, with headquarters at Denver, Colo., in 1903, and in 1905 was promoted to division storekeeper, with headquarters at Salt Lake City, Utah. Mr. Hall was promoted to general storekeeper in July, 1908, and held that position until his recent promotion to general purchasing agent.



W. B. Hall

### Engineering, Maintenance of Way and Signaling

**A. H. Hogeland**, who has been promoted to consulting engineer of the Great Northern, with headquarters at St. Paul, Minn., was born on January 10, 1858, at Southampton, Pa., and was graduated from Lafayette College, Easton, Pa., in the course in civil engineering in 1877. He entered railway service in 1879 as a surveyor on the St. Paul & Pacific, now a part of the Northern Pacific and subsequently served in a similar capacity on several other portions of the Northern Pacific. In April, 1880, he was promoted to topographer on location on the Rocky Mountain and Yellowstone divisions and in February, 1882, was promoted to assistant engineer on construction of the Boze-man tunnel. He was transferred to the Wisconsin division in September, 1884, and in July, 1885, entered the service of the St. Paul, Minneapolis & Manitoba, now a part of the Great Northern, as assistant engineer of construction and maintenance of the lines in Minnesota, North Dakota, South Dakota and Montana. In September, 1890, Mr. Hogeland was promoted to engineer maintenance of way of the Eastern district of the Great Northern, where he remained until August, 1896, when he was promoted to resident engineer. He was



A. H. Hogeland

promoted to assistant chief engineer in March, 1902, and in February of the following year was promoted to chief engineer. Mr. Hogeland was appointed consulting engineer in February, 1913, and in May of the following year was re-appointed chief engineer. He continued in that position until his recent promotion to consulting engineer.

**H. K. Lowry**, formerly signal engineer on the Chicago, Rock Island & Pacific, who has been on leave of absence, has resigned.

The title of engineer maintenance of way on all divisions of the Cleveland, Cincinnati, Chicago & St. Louis has been changed to division engineer.

**T. J. Skillman**, chief engineer maintenance of way of the Northwestern region of the Pennsylvania, with headquarters at Chicago, has been appointed chief engineer of the newly created Western region, which is a consolidation of the Northwestern and Southwestern regions, with the same headquarters. **F. J. Stimson**, chief engineer maintenance of way of the Southwestern region, has been appointed assistant chief engineer maintenance of way of the new Western region, with headquarters at Chicago. **T. W. Pinard**, assistant chief engineer maintenance of way of the Northwestern region, has been appointed assistant chief engineer maintenance of way of the new Western region, with headquarters at Chicago.

### Obituary

**Dr. M. P. Parrish**, chief surgeon of the Wabash, died at the Wabash Employees' Hospital at Decatur, Ill., on May 28.

**Samuel Larimer**, general agent of the Atchison, Topeka & Santa Fe, with headquarters at Atlanta, Ga., died in that city on May 27 after a long illness.

**George L. Potter**, formerly third vice-president of the Baltimore & Ohio, died on May 31 at his home near Baltimore, Md. Mr. Potter was born on December 28, 1856, at Bellefonte, Pa., and entered railway service in 1876 as a machinist's apprentice on the Pennsylvania. From 1880 to 1882 he was a machinist for this company at Renovo, Pa., and from the latter date to 1887, assistant master mechanic at Fort Wayne, Ind. From 1887 to 1893 he was master mechanic at the same point, and in the latter year was promoted to superintendent of motive power of the Northwest System, Pennsylvania Lines West. From 1899 to 1901 he was general superintendent of motive power. He was then appointed general manager of the Lines West, but resigned that position a few months thereafter to become general manager of the Baltimore & Ohio. In 1903 he was elected third vice-president of the latter road, and served until 1910, when he resigned.

**J. K. Conner**, chief engineer of the Nickel Plate and the Lake Erie & Western districts of the New York, Chicago & St. Louis, with headquarters at Cleveland, Ohio, died at Wabash, Ind., on May 18. Mr. Conner was born on April 12, 1871, at Wabash, Ind., and graduated at Rose Polytechnic Institute in 1891. He entered railway service in June, 1895, as assistant engineer on the Cleveland, Cincinnati, Chicago & St. Louis and was promoted to supervisor of track in January, 1899. In July of that year Mr. Conner was appointed assistant engineer on the Baltimore & Ohio, where he remained until April, 1900, when he was appointed assistant engineer on the New York Central. Later he was designer and draftsman in the bridge department of the Lake Shore & Michigan Southern, now a part of the New York Central, and in March, 1903, was appointed division engineer of the Lake Erie, Alliance & Wheeling, which also is now a part of the New York Central. Mr. Conner was appointed assistant engineer on the Lake Shore & Michigan Southern in September, 1905, and in April, 1906, entered the service of the Lake Erie & Western as first assistant engineer. He was promoted to chief engineer in February, 1914, and held that position until the Lake Erie & Western was made a part of the New York, Chicago & St. Louis, when he was appointed chief engineer of the Lake Erie & Western district. Mr. Conner's jurisdiction was extended over the Nickel Plate district last year.